
TUCSON WATER CONSERVATION PROGRAM 2020 ANNUAL REPORT



Water Conservation Program 2020 Annual Report

April 2021

City of Tucson

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Acknowledgments

Thank you to the Public Information & Conservation Staff and the GIS Staff at Tucson Water for helping to execute our programs and gather data for this annual report. We are grateful to our partners who make our high-quality conservation program possible, by working in our community every day, educating and providing services to our customers.



A proud part of the City of Tucson



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Abbreviations

Ccf – hundred cubic feet (1 Ccf = 748 gallons)

CCTF – Community Conservation Task Force

CEE – Consortium for Energy Efficiency

CHRPA – Community Home Repair Projects of Arizona

CW – Clothes Washer (usually referring to rebate program)

CWAC – Citizens' Water Advisory Committee

FY – Fiscal Year

GPCD – gallons per capita per day

Gpf – gallons-per-flush

GW – gray water (usually referring to rebate program)

HET – high-efficiency toilet

HEU – high-efficiency urinal

L-I – low-income (usually referring to conservation programs with income qualifications)

RWH – Rainwater Harvesting (usually referring to rebate program)

SERI – Sonoran Environmental Research Institute

TAP – Tucson Audit Program (customized commercial rebate program)

ULFT – Ultra-low-flush toilet (1.6 gpf)

2020 Conservation Snapshot

In 2020, total potable water use was 119 GPCD with a residential GPCD of 82, continuing a decade-long trend. The conservation fee, now in its twelfth year, has allowed Tucson Water to offer our customers high-quality conservation and education programs and robust efficiency incentives.

In 2020, programs funded by the conservation fee have resulted in:

- 34.8 million gallons conserved
- \$1.06 million invested in rebates and incentives
- 2,855 HET and urinal installations
- 337 rainwater harvesting and gray water installations

To date, programs funded by the conservation fee have resulted in:

- More than 3.6 billion gallons (10,972 acre-feet) conserved
- More than \$13.7 million invested in rebates and incentives
- Over 65,000 HET and urinal installations
- 2,850 rainwater harvesting, and gray water installations

In 2020, despite unprecedented challenges to in-person outreach and education, our partner education programs reached 20,000 students and over 2,500 adults.

In the last 12 years with a dedicated conservation fund, our education partners have reached 550,000 students and community members.

Milestones for 2020 include:

- Program staff continuing to process rebates, while working on an online platform to improve customer satisfaction and usability for customers.
- The Zanjeros streamlined audit processes, launching an online report and survey for customers, innovated the audit experience to ensure health and safety of team members and customers, and conducted over 1,000 audits.
- Revising the City's Drought Preparedness and Response Plan adopted by Mayor & Council in October 2020; the new plan aligns with the 2019 Drought Contingency Plan and provides new guidance on data-driven responses.
- Program partners innovating to deliver virtual and contact-free services in light of the pandemic restrictions on in-person gathering and learning that continued through 2020.
- Launching a plumbing emergency repairs program with CHRPA to expand our offerings for low-income customers, in addition to rainwater harvesting and high-efficiency toilet installations.
- The neighborhood-scale Stormwater Harvesting program (renamed the GSI Mini-Grants program) gaining full stream and delivering 39 community projects over the three-year pilot.

Upcoming focus areas for 2021 include:

- Finalize the One Water Water Conservation Program Technical Memo and draft a conservation plan for the next decade.
- Launch a new rebate platform and pilot projects on leak detection and multi-family and HOA customers.
- Evaluate the pilot Community Garden water rate and program.
- Continue development of tools to support targeted conservation outreach including the landscape water budget GIS application.
- Review consumption at city facilities and provide targeted water audits.

- Provide more support and build connections among program partners working on behalf of Tucson Water.

Conservation Program Budget

This operating report describes the expenditures and activities of the Tucson Water Conservation Program for July 1, 2019 through June 30, 2020, referred to as Fiscal Year (FY) 19-20. Although this annual report has shifted to a calendar year timeframe, financial reporting will still be provided on a fiscal year basis to ensure data accuracy and verification from business services. Funding for the Conservation Program is collected by a conservation fee assessed on all potable water sales and operates out of a separate fund within the Tucson Water Department. Table 5 illustrates funds raised and the expenditures since the inception of the Water Conservation Fund in FY 08-09. The fund was established by the Mayor & Council through adoption of ordinance 10555 on May 20, 2008.

The Conservation and Education subcommittee of CWAC reviews and advises the Mayor and Council on the budget and programs funded by the water conservation fee. The subcommittee meets monthly with staff and makes recommendations to the main CWAC body.

Water Conservation Program Expenditures

The Conservation Fund expenditures listed below and shown in Table 5 (page 13) reflect a financial summary of the fiscal year prepared by the Business Services division of Tucson Water. This report also features rebate program summaries of the quantity, cost and estimated savings of rebates processed during the fiscal year. The program numbers provided in the following sections are for operating purposes and not intended to reconcile with financial reports. The water conservation fund can be separated into seven main categories as shown in Figure 1 with a total fund expenditure of \$3,776,282.

The seven categories are:

1. Operating (\$513,750)

Salaries and wages for permanent employees:

- 1 Supervisor
- 1 Water Conservation Specialist
- 1 Lead Planner
- 1 Urban Landscape Manager
- 6 Zanjeros (~1/2 time)

2. Professional Services (\$1,918,048)

Contractors that support the conservation program through research and implementation of education, commercial water audits, and low-income toilet and rainwater harvesting programs

3. Rebate Programs (\$1,061,825)

Incentive and rebate programs designed offset customer expense of implementing water efficiency retrofits.

4. Outreach & Marketing (\$68,360)

Public relations and advertising to promote conservation programs.

5. Fixtures & Devices (\$41,359)

Materials to support programs (Low-income HET materials and conservation devices) and promotional materials including store displays and conservation giveaway items.

6. Miscellaneous (\$23,050)

Travel, training, memberships, printing, subscriptions, uniforms, computers, etc.

7. Administration Fee (\$149,870)

Paid to the City of Tucson for business and administrative services.

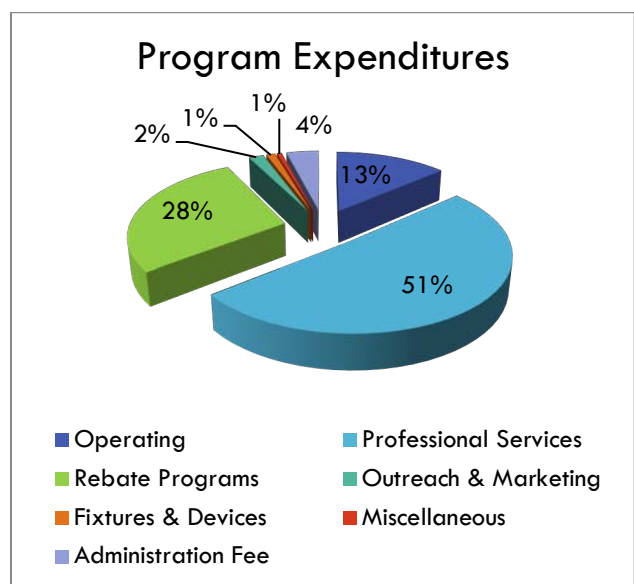


Figure 1: FY 19-20 Water Conservation Program Expenditures by Percentage

GPCD - Gallons per Capita per Day

Tucson Water has a long history of planning and developing water supplies for today and the future. This has been accomplished by increasing the use of renewable Colorado River water, using recycled water (known as reclaimed water) for irrigation purposes, and supporting one of the longest running conservation programs in the nation. As a result, Tucsonans are now using the same total amount of water as in mid-1980s, while population has increased by more than 200,000 and service connections have increased by more than 75,000. This fact alone is a strong indicator that water is being used more efficiently than ever.

A common metric for comparing annual water use and water conservation effectiveness is GPCD, which is derived by dividing the number of people served by the amount of water produced. Table 2 illustrates the reduction in GPCD compared to a rise in population over the last decade; Figure 2 illustrates total and residential GPCD trends since 2000.

	Total GPCD	Residential GPCD¹	Population
2010	139	94	705,817
2011	136	92	706,118
2012	131	89	708,863
2013	127	88	712,698
2014	124	85	715,260
2015	117	80	717,875
2016	117	81	721,205
2017	122	82	725,461
2018	116	80	731,236
2019	111	76	735,610
2020	119	82	739,485

Table 1: Annual GPCD (not including reclaimed system deliveries) and estimated Tucson Water service area population from 2010 to 2020.

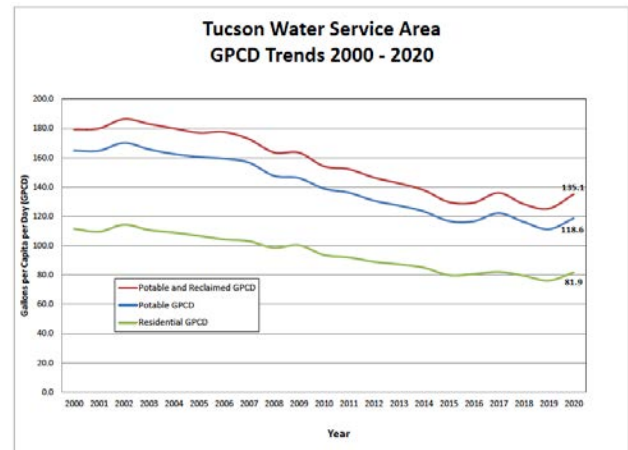


Figure 2: Total and Residential GPCD from 2000 to 2020

Water Efficiency Programs

Programmatic Updates

Rebate Administration

No administrative or policy changes were made to the rebate programs during this fiscal year. Most rebates continue to be issued as bill credits since the bulk of rebates processed are for toilets and clothes washers. Residential rainwater harvesting rebates, gray water rebates and commercial rebates are issued as checks. Staff is working with the city IT department on the development of an online platform for rebate processing. This would allow customers to submit an application and rebate paperwork online instead of by mail. The platform should be complete by spring 2021.

National Updates

Income Tax Parity Issue

Currently any rebates \$600 or more are subject to income tax and applicants must submit a W-9 form with their application before Tucson Water can process their rebate. The W-9 form requires submitting a social security or tax identification number. The applicant will be issued a 1099-MISC for miscellaneous income to be filed with their tax return. Tucson Water continues to support legislative action to change the tax code to

¹ Residential GPCD includes multifamily water use.

remove the taxable income requirement and create parity between water and energy conservation programs.

EPA WaterSense Program

Tucson Water, along with over 2,000 organizations across the county, is a proud partner of the EPA's WaterSense program, established in 2006.

WaterSense has helped American consumers save over 4.4 trillion gallons of water and more than \$87 billion in water and energy bills. Additionally, because of the close connection between energy and water, WaterSense-labeled products have saved 522.9 billion kilowatt hours, enough to supply a year's worth of power to more than 47.7 million homes. In 2019 alone, over 34,000 WaterSense labeled products saved 871 billion gallons of water.

Like many water providers across the county, Tucson Water depends on the WaterSense program's product labeling criteria to identify rebate-eligible products. WaterSense has ensured national consistency in rebate programs and product quality that meet rigorous standards; high-quality products and a common language, similar to EnergyStar, have elevated the conversation about water efficiency and conservation to a national platform.

WaterSense is a necessary partner in effectively administering water conservation incentive programs and finally received federal authorization with the passing of America's Water Infrastructure Act of 2018. Although the Act does not set a budget for WaterSense, it ensures that the program remains in the EPA budget annually. WaterSense was funded in 2020 and Tucson Water wrote a letter of strong support as part of a federal review of the program, emphasizing the need for continued research and development to ensure an engineering-driven, standards-based approach to WaterSense product labeling.

Department of Energy Standards Updates

Tucson Water provided written comments to the U.S. Department of Energy on two proposed changes to regulatory standards for clothes washers and showerheads that would loosen standards by creating new, unregulated product categories, resulting in

increased water use and consumer costs. In late 2020 the proposed changes were approved by the agency, but as of early 2021 a formal review of many proposed federal environmental changes, including these fixture and appliance standards, are under review.

Service Area Distribution of Program

Distribution of Programs by Customer Class

A stated policy of the conservation program is to "provide an equitable distribution of conservation benefits throughout customer classes and the community." Water use, savings achieved through rebates and the expenditures for these rebates are broken out by customer class in Figures 3, 4 and 5.

Programs for single-family customers include high-efficiency toilet, high-efficiency clothes washer, gray water, and rainwater harvesting rebates. Programs for multi-family customers include high-efficiency toilet and customized rebates. Programs for commercial customers include high-efficiency toilet, high-efficiency urinal and customized commercial rebates.

Distribution of Programs by Ward

The geographical distribution of residential rebate programs by Ward, compared to the percent of customers by Ward illustrates each rebate program's geographic distribution and saturation. This data, paired with a service area map showing all rebate recipients for a given program, provides a clear picture of rebate program participation.

Ward demographics are important considerations when developing and improving a program, as well as the age of homes and businesses. For example, the single-family HET program will not show a large percentage of installations where a majority of the homes were built after 1991; Ward 4 is a good example of this pattern.

Additionally, combining the impacts of regular income and low-income incentive programs provides a more holistic understanding how program uptake in specific parts of our community. For example, the single-family HET rebate program and the low-income HET direct install program have unequal concentrations of

installations in the different jurisdictions. However, combined, the two programs illustrate a more uniform distribution throughout the service area as shown in Figure 12.

This information informs program planning to identify areas of potential savings that can be targeted with increased or modified outreach and new or modified programs that will reach underserved communities.

Maps illustrating the geographic distribution of rebate programs are now available on the website. To access the rebate program map, go to: tucsonaz.gov/water/conservation. Navigate to the section titled Water Conservation and Efficiency Annual Reports.

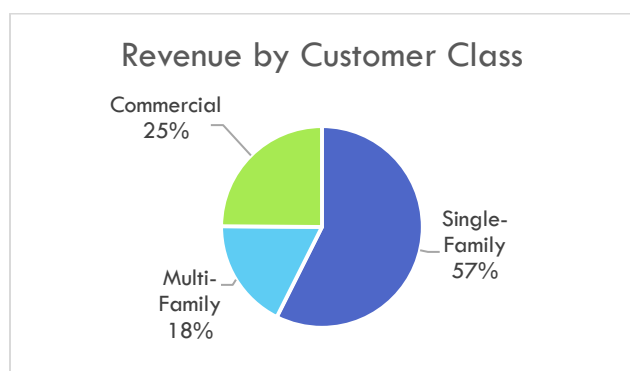


Figure 3: FY20 Revenue by Customer Class

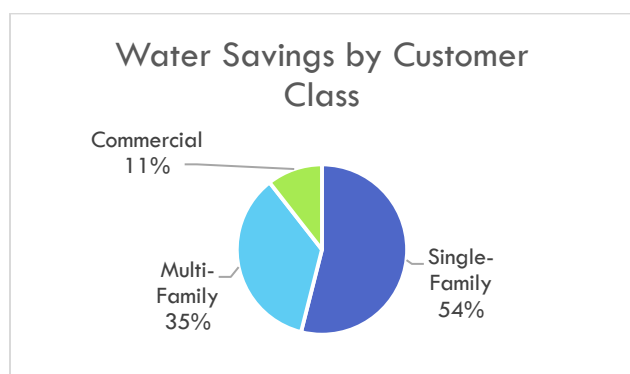


Figure 4: Percent Cumulative Water Savings by Customer Class since 2009. Savings are determined for each program (see program details starting on p. 16) and totaled by customer class depending on the type of rebate.

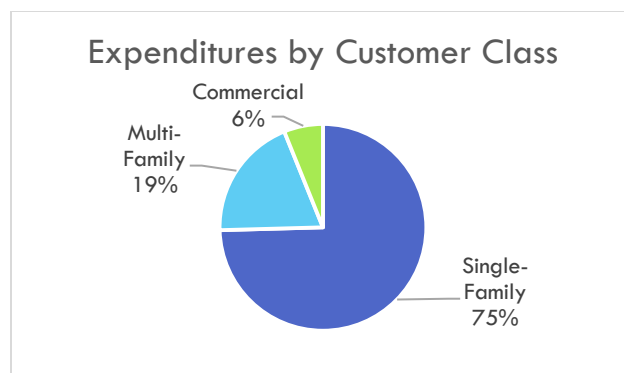


Figure 5: Percent of Cumulative Expenditures by Customer Class since 2009. Expenditures are determined for each program based on the dollar amount of each rebate given (see program details starting on p. 17) and totaled by customer class depending on the type of rebate.

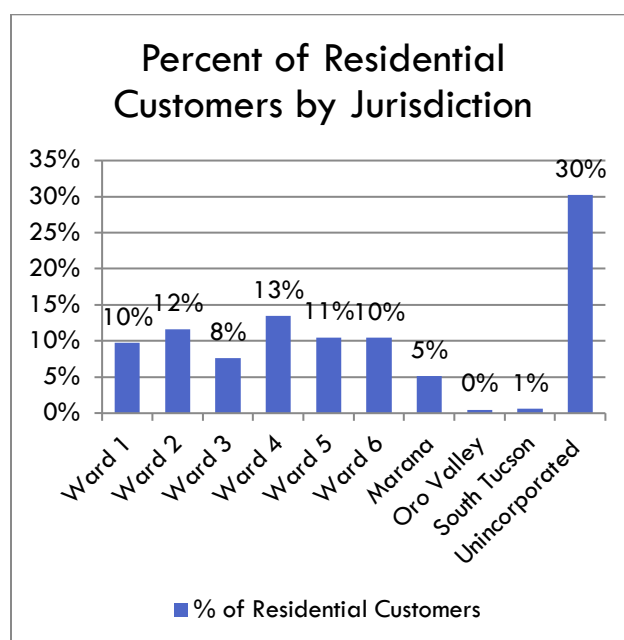


Figure 6: Percent of Residential Customers by Jurisdiction, broken out by Ward within city limits and outside of the city limits.

Conservation Program Activity

Rebates by Year

Table 2 reports the rebates processed for each incentive program by fiscal year and Table 3 reports the expenditures for each incentive program.

Water Savings

Tucson Water calculates water savings for each incentive program using a mix of field research and customer consumption analysis. Savings for each program are calculated with the known information

about fixture usage and behavior patterns. Specific program savings numbers are described in the following sections that discuss rebate programs in greater detail.

Annual water savings are calculated for each program by multiplying the number of fixtures replaced with an average annual savings number. These numbers reflect the savings expected in a given program year based on the number of installations that were completed, so this savings number fluctuates annually. Additionally, cumulative savings are calculated for each program by summing the annual savings calculated for each year a given program has been running. This calculation is done for the expected lifetime of the fixtures, which is based on industry research for fixture devices and has been adopted by conservation organizations such as the Alliance for Water Efficiency.

Water Conservation Program 2020 Annual Report

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Single-Family HET	1,794	2,774	2,166	1,762	2,477	2,279	2,034	2,202	1,659	1,655	1,403	1,210	23,415
Low-Income HET	58	1,132	202	519	926	946	897	764	675	433	576	420	7,548
Multi-Family HET	149	376	282	1,938	5,097	4,382	5,469	1,577	3,685	3,063	3,271	860	30,149
Commercial HET	116	351	586	195	259	172	860	167	124	180	193	342	3,745
High-Efficiency Urinal	0	0	16	0	43	282	411	12	28	2	0	8	802
Clothes Washer	0	0	0	0	0	0	509	1,774	1,713	1,434	1,234	1,371	8,035
Gray Water	0	0	7	9	11	21	41	25	28	15	16	19	192
Irrigation Upgrade	1	4	7	8	2	9	0	1	0	1	0	0	33
Commercial Upgrade	0	0	0	0	0	0	0	31	7	3	3	0	44
Rainwater Harvesting	0	0	0	140	314	295	346	311	467	343	316	318	2,850

Table 2: Total Rebates by Calendar Year

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Single-Family HET	\$153,959	\$232,598	\$177,966	\$144,544	\$201,949	\$184,553	\$160,419	\$165,381	\$122,184	\$123,475	\$101,850	\$88,500	\$1,857,378
Low-Income HET*	\$30,090	\$450,326	\$77,772	\$188,434	\$342,213	\$311,397	\$293,682	\$248,278	\$228,988	\$165,807	\$270,936	\$287,154	\$2,895,078
Multi-Family HET	\$11,920	\$28,554	\$21,259	\$190,762	\$504,264	\$434,362	\$523,699	\$118,255	\$276,375	\$229,725	\$245,325	\$64,350	\$2,648,850
Commercial HET	\$10,378	\$31,211	\$49,902	\$17,336	\$20,964	\$14,210	\$75,995	\$16,125	\$31,050	\$14,700	\$14,475	\$29,400	\$325,746
High-Efficiency Urinal	\$ -	\$ -	\$3,200	\$ -	\$19,300	\$141,000	\$89,700	\$2,400	\$5,800	\$400	\$ -	\$1,600	\$263,400
Clothes Washer	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$101,800	\$354,600	\$342,400	\$287,200	\$246,800	\$274,200	\$1,622,600
Gray Water	\$ -	\$ -	\$1,208	\$1,471	\$5,644	\$8,323	\$18,177	\$12,473	\$17,844	\$11,767	\$10,301	\$11,477	\$99,685
Irrigation Upgrade	\$2,823	\$5,743	\$35,393	\$52,110	\$3,532	\$80,156	\$600	\$664	\$ -	\$8,869	\$ -	\$ -	\$189,889
TAP Commercial Upgrade	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$32,484	\$3,450	\$7,800	\$14,114	\$ -	\$57,848
Rainwater Harvesting	\$ -	\$ -	\$ -	\$163,838	\$399,610	\$333,896	\$428,251	\$385,979	\$524,189	\$501,314	\$450,119	\$433,350	\$3,674,643
Emergency Repairs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$27,973	\$110,062	\$138,034
Total	\$209,170	\$748,432	\$366,699	\$758,495	\$1,497,475	\$1,507,897	\$1,692,324	\$1,336,639	\$1,552,280	\$1,351,057	\$1,381,894	\$1,300,093	\$13,773,150

Table 3: Total Incentive Program Expenditures by Calendar Year

*Includes contracted services to execute limited-income program.

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Single-Family HET	13,423,605	20,756,455	16,207,095	13,184,165	18,534,153	17,052,618	15,219,405	16,476,465	12,413,468	12,383,538	10,497,948	9,053,825	175,202,738
Low-Income HET*	497,495	9,709,730	1,732,655	4,451,723	7,942,765	8,114,315	7,694,018	6,553,210	5,789,813	3,714,058	4,940,640	3,602,550	64,742,970
Multi-Family HET	1,114,893	2,813,420	2,110,065	14,501,085	38,138,303	32,788,315	40,921,793	11,799,903	27,573,013	22,918,898	24,475,258	6,434,950	225,589,893
Commercial HET	1,185,520	3,587,220	5,988,920	1,992,900	2,646,980	1,757,840	9,147,265	1,839,965	3,687,230	1,657,100	1,620,235	3,290,840	38,402,015
High-Efficiency Urinal	0	0	99,296	0	266,858	1,750,092	2,550,666	74,472	173,768	12,412	0	49,648	4,977,212
Clothes Washer	0	0	0	0	0	0	3,584,887	12,494,282	12,064,659	10,099,662	8,691,062	9,655,953	56,590,505
Gray Water	0	0	95,305	122,535	149,765	285,915	558,215	340,375	381,220	204,225	217,840	258,685	2,614,080
Irrigation Upgrade	229,950	919,800	1,609,650	1,839,600	459,900	2,069,550	0	229,950	0	229,950	0	0	7,588,350
TAP Commercial Upgrade	0	0	0	0	0	0	0	4,141,970	253,012	274,677	1,123,049	0	5,792,708
Rainwater Harvesting*	0	0	0	727,485	1,876,790	1,603,225	2,029,895	1,880,720	2,738,785	2,897,460	2,477,125	2,474,710	18,706,195
Total	16,451,463	37,786,625	27,842,986	36,819,493	70,015,513	65,421,870	81,706,143	55,831,312	65,074,967	54,391,979	54,043,156	34,821,161	600,206,665

Table 4: Annual Water Savings by Program; this data is displayed in Figure 7

	FY 08/09	FY 09/10	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20
Cons. Fee	\$0.03	\$0.04	\$0.05	\$0.07	\$0.07	\$0.07	\$0.07	\$0.08	\$0.08	\$0.09	\$0.10	\$0.10
Budget	\$997,000	\$997,000	\$1,086,690	\$2,902,630	\$3,356,820	\$2,950,000	\$3,050,000	\$3,540,250	\$3,540,250	\$3,540,250	\$3,895,620	\$3,766,785
Revenue	\$1,217,280	\$1,716,880	\$2,124,838	\$2,816,241	\$2,830,967	\$2,832,950	\$2,726,208	\$3,000,905	\$3,035,932	\$3,524,361	\$3,613,761	\$3,829,450
Expenditure	\$794,462	\$831,883	\$1,720,075	\$1,795,082	\$2,727,541	\$2,725,288	\$2,771,450	\$2,785,621	\$3,445,812	\$3,108,333	\$3,036,034	\$3,776,282

Table 5: Water Conservation Program Budget Historic Overview, reported on a Fiscal Year.

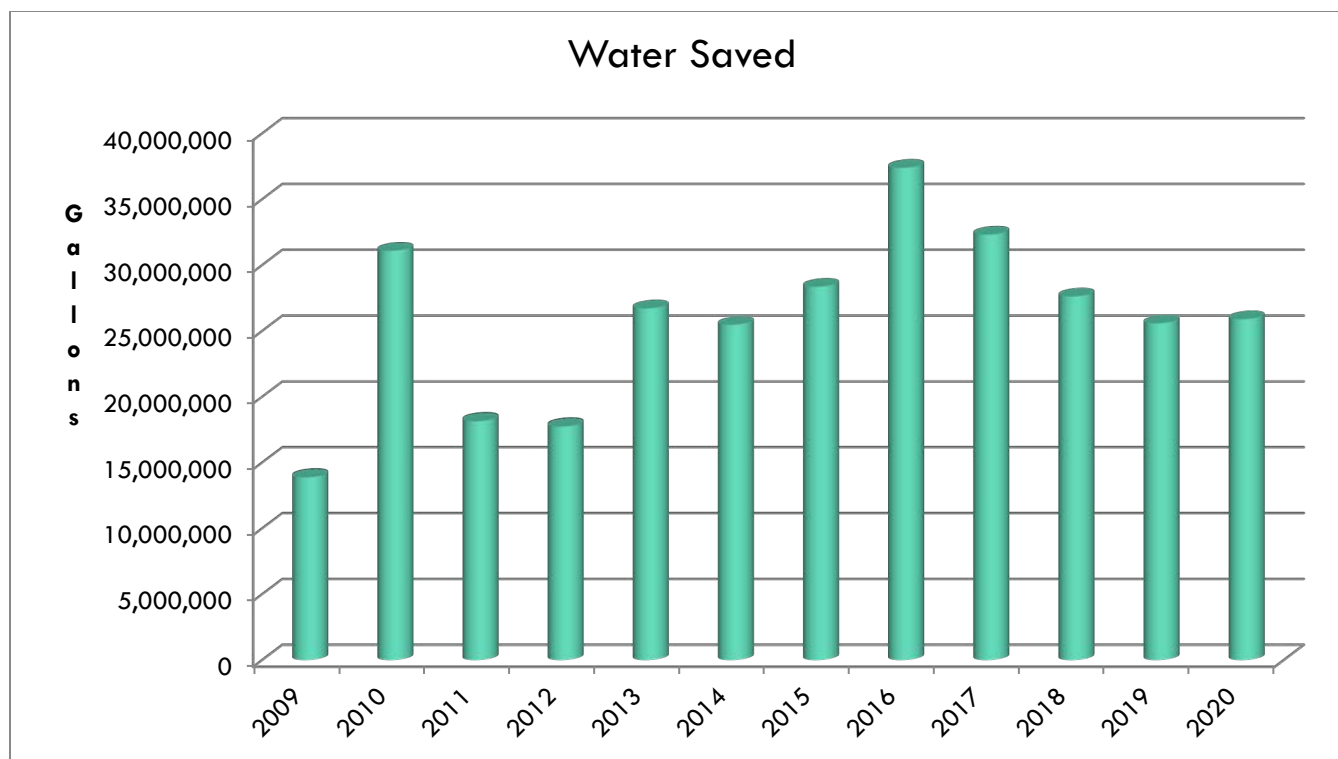


Figure 7: Annual Water Savings from Tucson Water's Incentive Programs

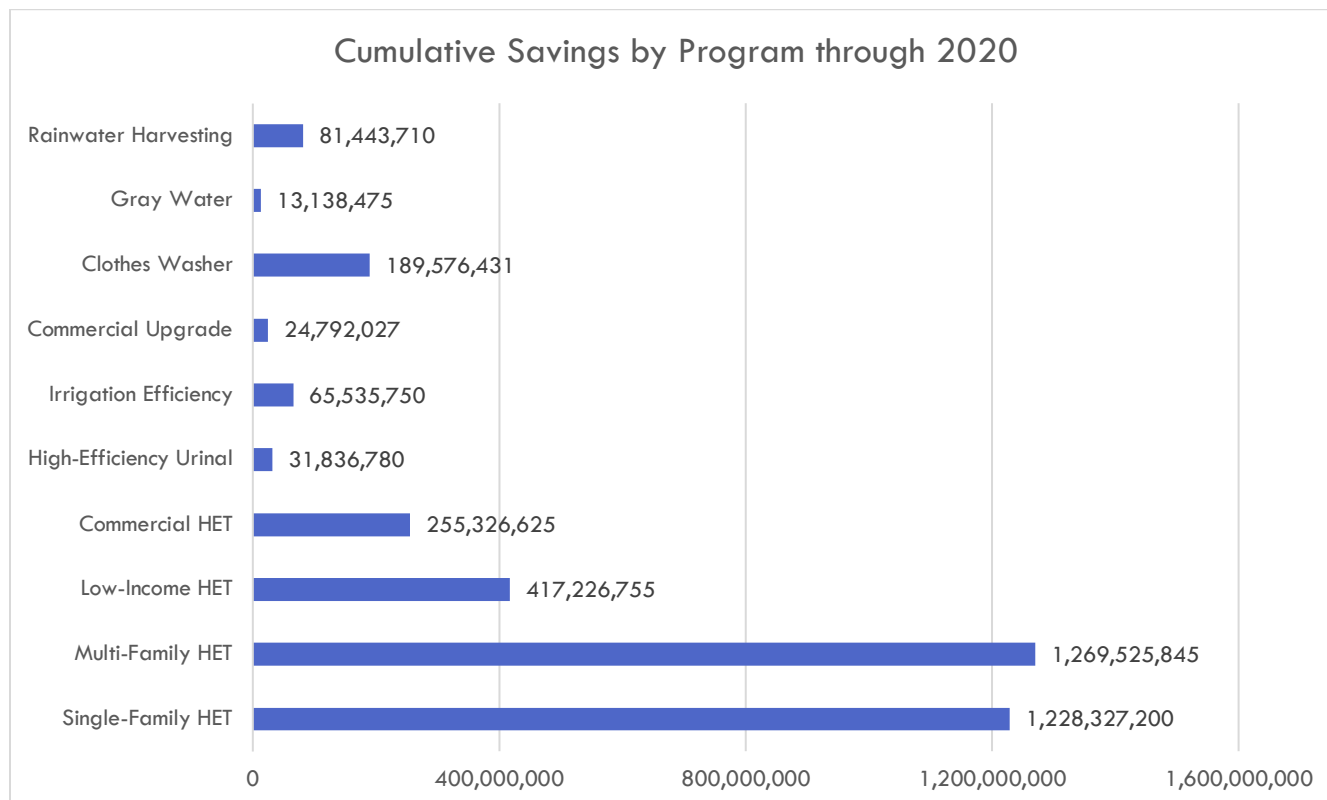


Figure 8: Cumulative Water Savings shown by program achieved from Tucson Water's Incentive Programs

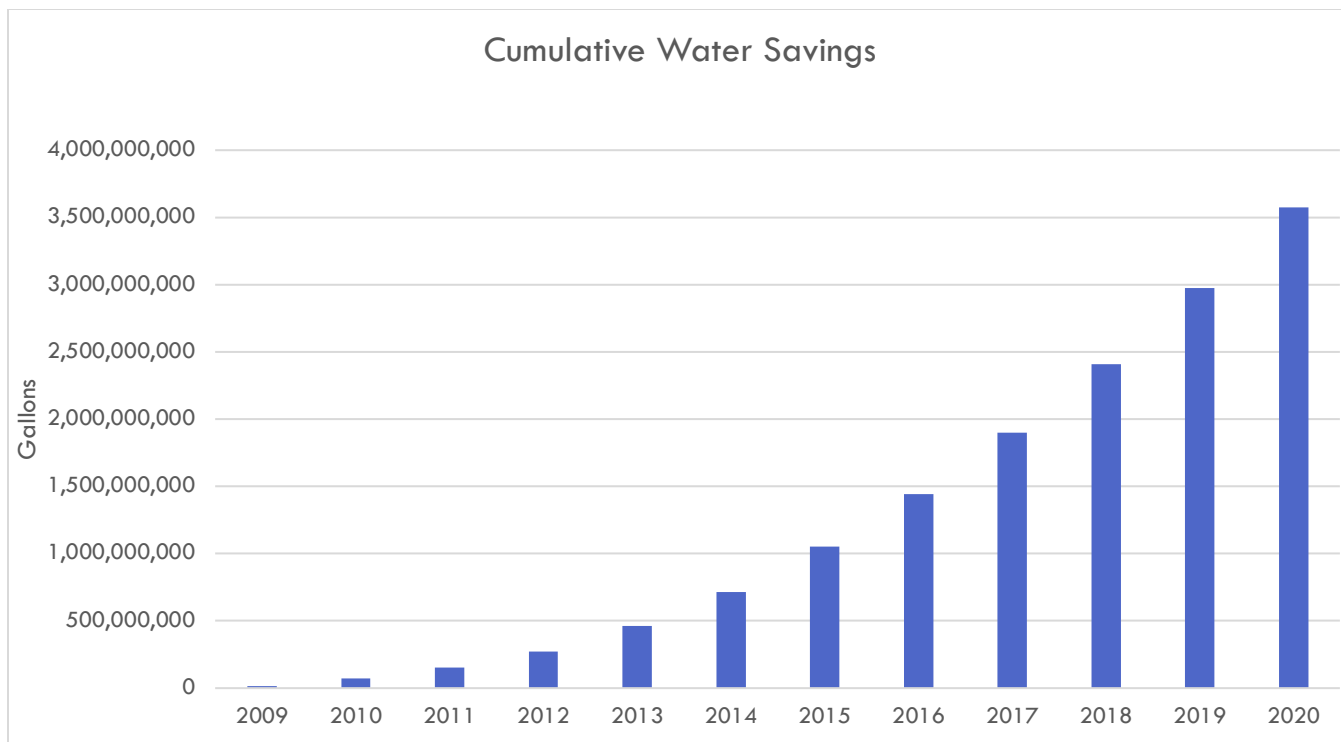
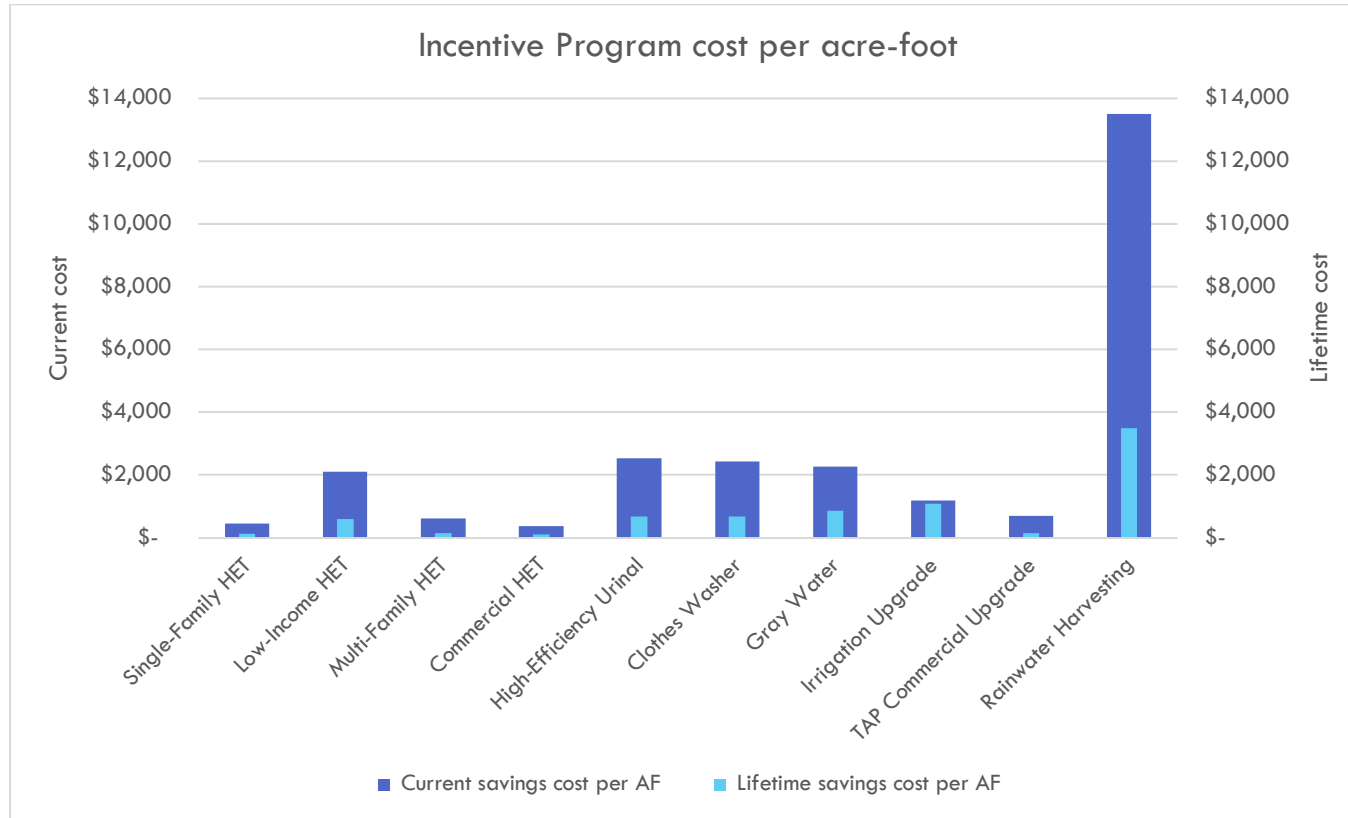


Figure 9: Total program water savings calculated from incentives since Conservation Fee inception.



Incentive Program	Useful Life (years)
Single-Family HET	25
Low-Income HET	25
Multi-Family HET	25
Commercial HET	25
High-Efficiency Urinal	25
Clothes Washer	15
Gray Water	15
Irrigation Upgrade	10
TAP Commercial Upgrade	20
Rainwater Harvesting	20

Table 6: Cost per acre-foot of savings per program, to-date and for projected fixture life.

Table 7: Useful life of fixtures used to calculate cost per savings; all numbers taken from the Alliance for Water Efficiency except for Rainwater Harvesting, which was taken from Batchelor, C., Fonseca, C. and Smits, S., 2011. *Life-cycle costs of rainwater harvesting systems*. <<http://www.irc.nl/op46>>.



Single-Family HET Rebate

Implementation date: July 7, 2008

Modified March 1, 2015; July 1, 2016

This rebate program is designed to encourage single-family residential customers to retrofit older 3.5 or more gpf toilets with high-efficiency models. Only WaterSense labeled, high-efficiency toilets qualify for the rebate, which use 1.28 gpf or less.

Program Activity:	2020	Cumulative
Number of HETs Retrofit:	1,210	23,415
Expenditure:	\$ 88,500	\$ 1,857,378
Estimated Gallons Saved:	9 million	1.23 billion
Estimated Acre-Feet Saved:	28	3,500

Customer Payback: The average cost of HETs purchased by participants was \$197. The cost of qualifying toilets typically starts at \$85. Total annual water and sewer savings per retrofit is \$72 with, on average, a payback period of 1.7 years, after the \$75 rebate per toilet.

Outreach and Promotion: Point-of-sale displays are provided to any stores that want them; currently over 40 retailers are promoting the HET rebate programs. Tucson Water works with each retailer to provide display options that work with their merchandizing. Displays are stocked at 20 stores monthly with brochures and rebate applications. Additionally,

rebates are promoted throughout the year through Tucson Water's monthly newsletter included in the utility services statement, at community events, on social media and through community partners.

Single-Family HET Retrofit Savings:

The single-family HET savings of 20.5 gallons per day (gpd) per unit (7,482.5 gallons per annum) originates from an analysis of program participants completed in 2011. This analysis compared water use between 2008 and 2011 of single-family households that had participated in the HET rebate program in 2008.

Low-Income HET Direct Install

Implementation date: October 2009

This efficiency program offers free high-efficiency toilet replacements for qualifying low-income homeowners who are Tucson Water customers. The program replaces toilets in homes built prior to 2011 with ultra high-efficiency toilets, flushing 1.1-gpf or less. Since many of these older toilets have other functional problems that cause chronic leaking or water flow, the effectiveness of the program is compounded by resolving these issues.

Program Activity:	2020	Cumulative
Number of HETs Retrofit:	420	7,396
Expenditure:	\$ 287,154	\$ 2,895,078
Estimated Gallons Saved:	4.3 million	417.2 million
Estimated Acre-Feet Saved:	13	1,280

Customer Payback: The payback is immediate because the HET and installation are free to the customer. Therefore, the participant will experience, on average, an annual savings of \$72.

Income Eligibility: Eligibility guidelines were updated in 2020 to align with other assistance programs offered by Tucson Water and Pima County. The new guidelines are based on Federal Poverty Level (FPL) determined by the U.S. Department of Health and Human Services (HHS). Conservation low-income programs use 200% of FPL as the qualification threshold, which is updated each year by HHS. This program is available to all owner-occupied households that verify an annual income of 200% FPL or less.

Outreach and Promotion: Tucson Water utilizes the program contractor, CHRPA, to execute this program and promotes this program as one of several low-income services provided by the utility, along with promotion of other residential rebate programs. 2020

was lower than normal due to pandemic restrictions of not entering customers' homes except for emergency repairs. CHRPA expects to resume higher installation rates in 2021.

Low-Income HET Retrofit Savings:

The low-income HET savings of 23.5 gpd per unit (8,577.5 gallons per annum) comes from an analysis of program participants completed in 2014. This analysis compared water use between 2011 and 2014 of low-income households that had participated in the HET rebate program in 2011.

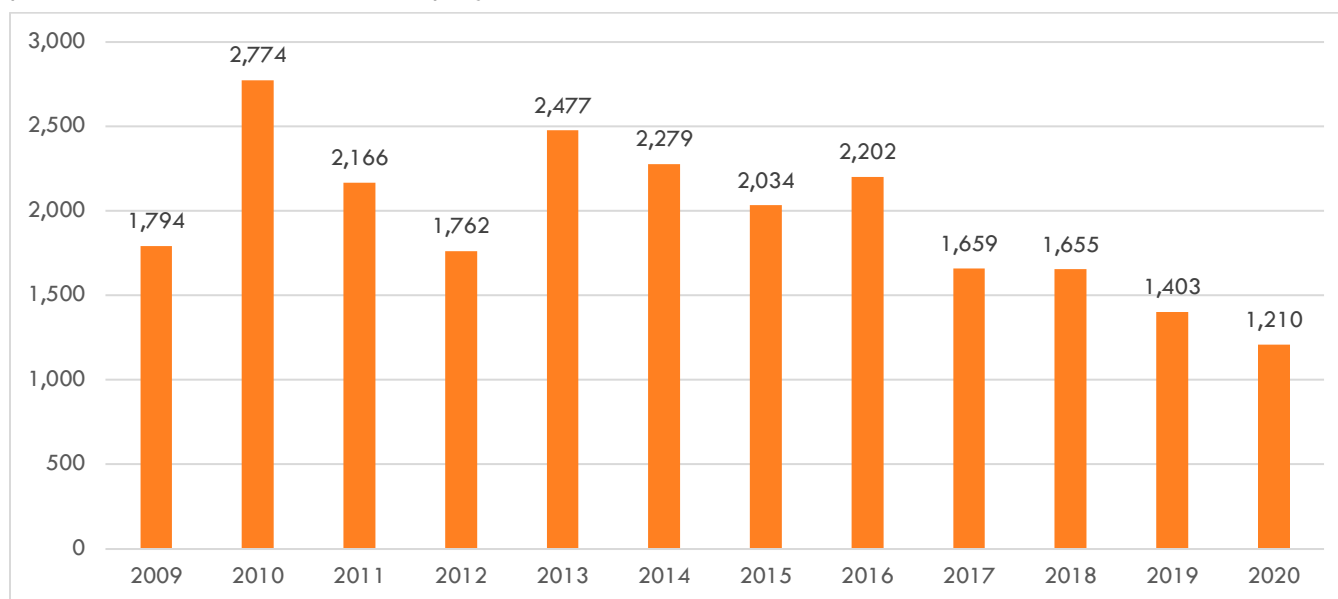


Figure 10: Single-Family HET Rebates by Year

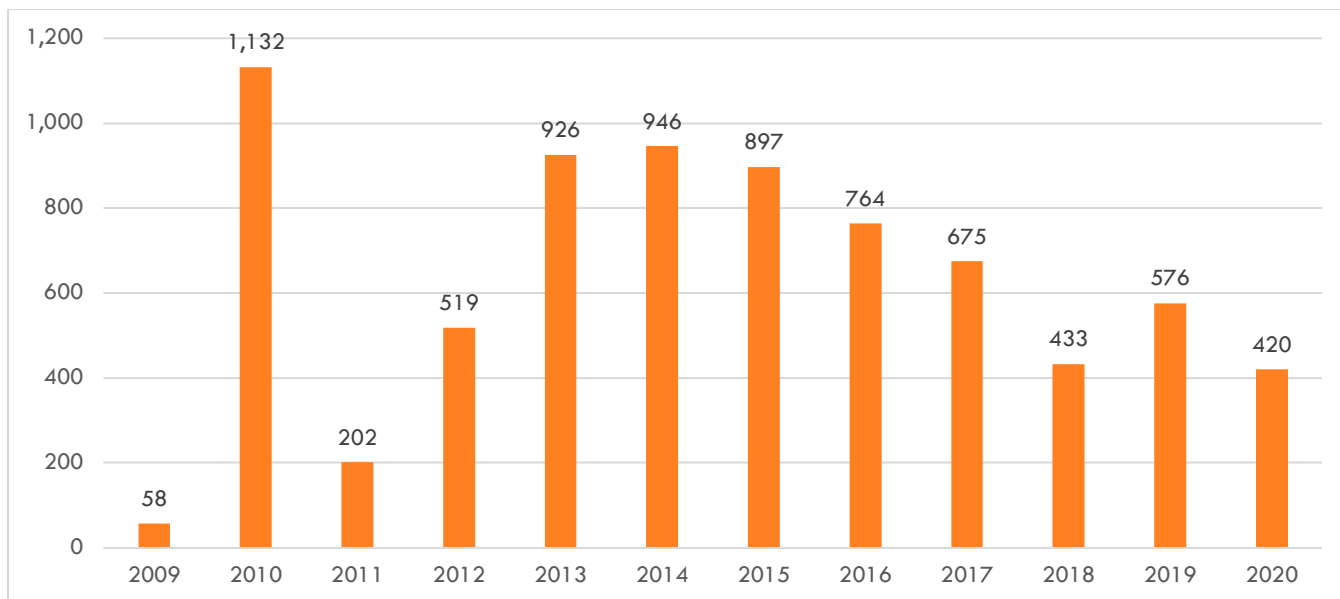


Figure 11: Low-Income HET Direct Installs by Year

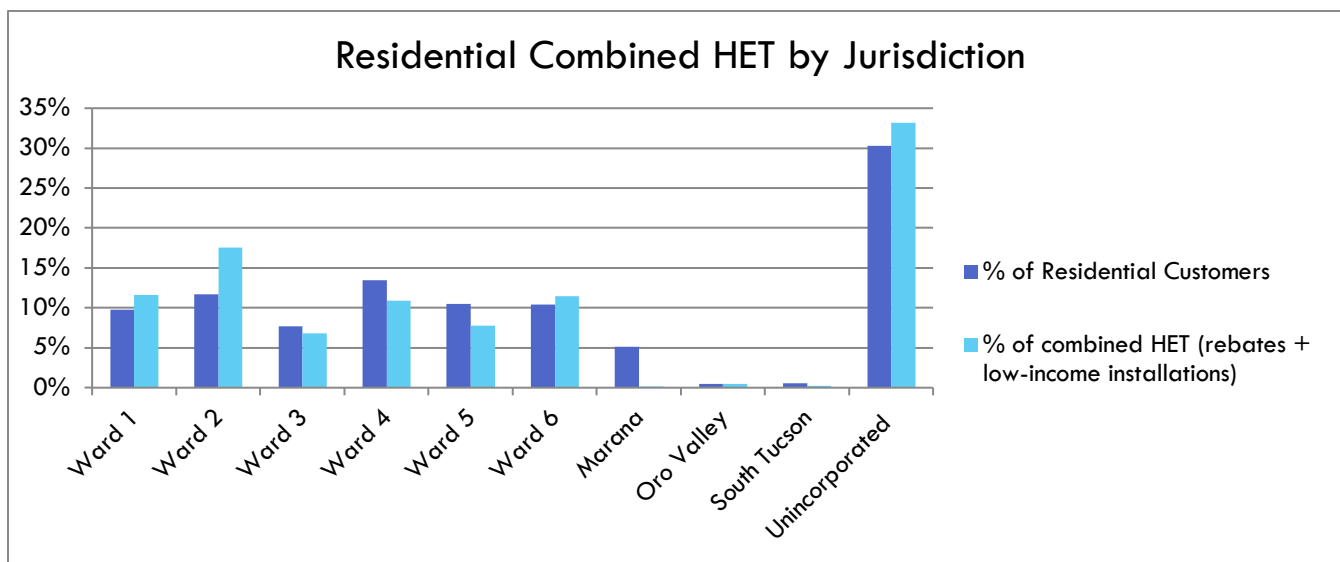


Figure 12: Combined single-family high-efficiency toilets, including rebates and direct installations for low-income customers compared to the percent of single-family customers in each ward or other political boundary served by Tucson Water.

Multi-Family HET Rebate

Implementation date: July 7, 2008; modified March 1, 2015

This rebate program is designed to encourage multi-family customers to retrofit older 3.5 or more gpf toilets with high-efficiency models. Only WaterSense labeled, high-efficiency toilets qualify for the rebate, which use 1.28 gpf or less.

Program Activity:	2020	Cumulative
Number of HETs Retrofitted:	860	30,149
Expenditure:	\$64,350	\$2,648,850
Estimated Gallons Saved:	6.4 million	1.27 billion
Estimated Acre-Feet Saved:	20	3,896

Customer Payback: The average cost of multi-family HETs purchased by participants was \$114. The cost of qualifying toilets typically starts at \$75. Total annual water and sewer savings per retrofit is \$80 with, on

average, a payback period of less than half a year, after the \$75 rebate.

Outreach and Promotion: Promotion of this program is largely done at a staff level by providing a customized analysis to customers interested in this rebate program. The analysis considers current water usage, a fixture count and behavior assumptions to provide each customer with return-on-investment calculations to help customers make informed decisions. Information is also provided at point-of-sale displays at retailers and plumbing suppliers, similar to our residential HET rebate.

Multi-Family HET Retrofit Savings:

The single-family savings number of 20.5 gpd (7,482.5 gallons per annum) is used to calculate multi-family savings estimates.

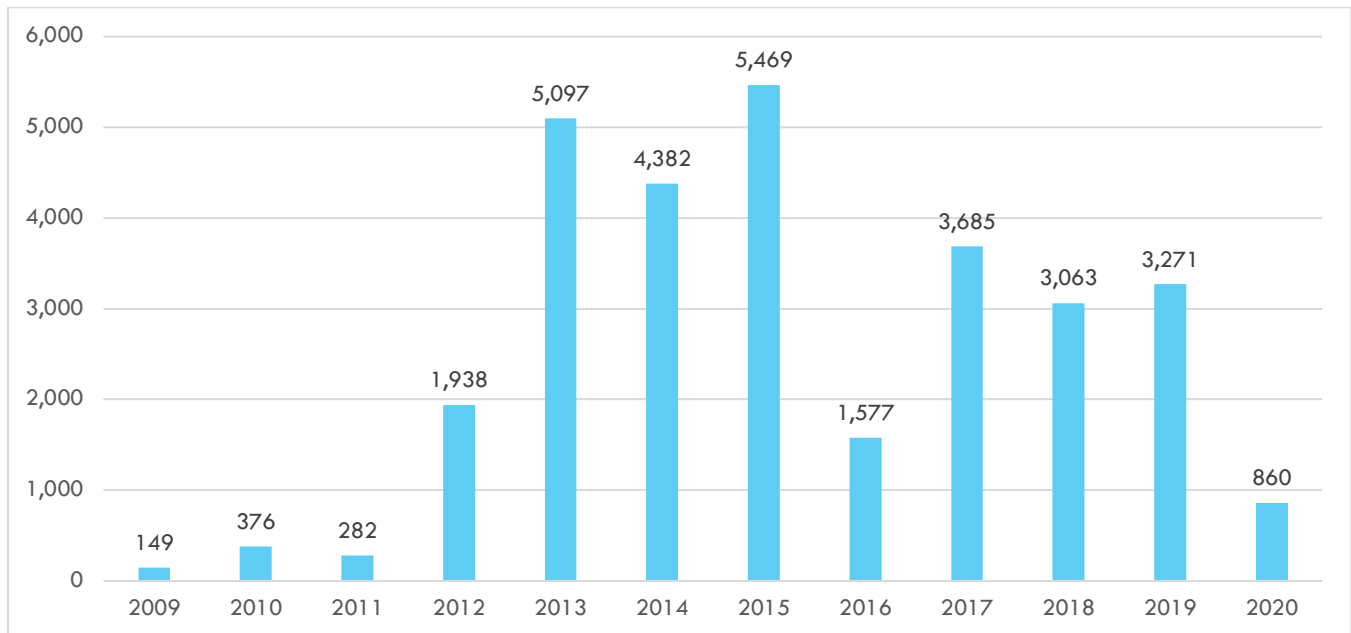


Figure 13: Multi-Family HET Rebates by Year



Commercial HET Rebate

Implementation date: July 7, 2008; modified March 1, 2015

This rebate program is designed to encourage commercial/industrial customers to retrofit older 3.5 or more gpf toilets with high-efficiency models. Only WaterSense labeled, high-efficiency tank-type toilets or flushometer valve/bowl combinations rated by Maximum Performance (MaP) testing at 800 grams or more qualify for the rebate, which use 1.28 gpf or less.

Program Activity:	2020	Cumulative
Number of HETs Retrofit:	365	3,745
Expenditure:	\$29,400	\$325,746
Estimated Gallons Saved:	3.3 million	255 million
Estimated Acre-Feet Saved:	10	784

Customer Payback: The average cost of commercial HETs purchased by participants was \$127. The cost of qualifying toilets typically starts at \$75. Total annual water and sewer savings per retrofit is \$85 with, on

Updated Commercial HET Retrofit Savings for FY 2015-16:

Differentiated water savings were calculated for flushometer-type and gravity-tank or pressure assist-tank types based on the CII estimated toilet savings in the CCTF 2006 report. These estimates were based on ULFTs (1.6 gpf), so a 20% additional savings is added for HETs (1.28 gpf) resulting in 50 gpd for flushometer-type toilets and 23 gpd for gravity-type and pressure-assist tank toilets. The new calculations for determining water savings for flushometer-valve type toilet retrofit are 50 gpd or 16,425 per annum and 23 gpd or 8,030 gallons per annum for each gravity-tank and pressure assist-tank type toilet.

average, a payback period of just over half a year after the \$75 rebate.

Outreach and Promotion: The same point-of-sale displays are used to promote all high-efficiency toilet rebates. Similar to the multi-family HET program, a customized analysis is provided to the customer. The analysis considers current water usage, a fixture count and behavior assumptions to provide each customer with return-on-investment calculations to help customers make informed decisions.

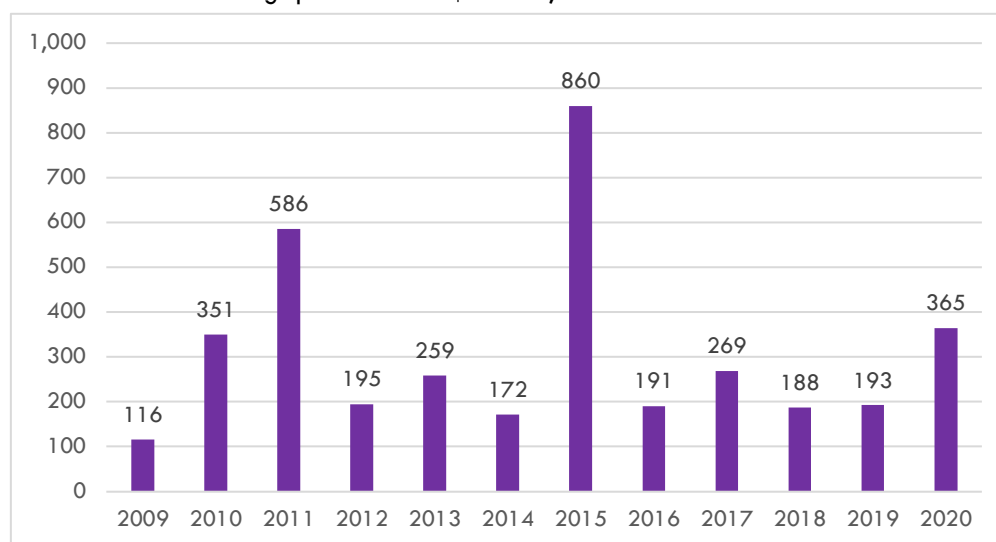


Figure 14: Commercial HET Rebates by Year



High-Efficiency Urinal Rebate

Implementation date: January 1, 2011; modified January 1, 2013; modified March 1, 2015

This rebate program is designed to encourage commercial customers to retrofit high water-use urinals with high-efficiency models.

Program Activity:	2020	Cumulative
Number of HEUs Retrofit:	8	802
Expenditure:	\$1,600	\$263,400
Estimated Gallons Saved:	49,648	28.7 million
Estimated Acre-Feet Saved:	0	88

Effective January 1, 2013, the rebate was increased from \$200 to \$500 and the range of options expanded to include all WaterSense labeled, as well as waterless models.

Effective March 1, 2015 the rebate was changed back to \$200, which is more in line with the commercial HET rebate.

High-Efficiency Urinal Retrofit Savings:

The calculation for determining water savings for each retrofit is 17 gpd or 6,206 gallons per annum. This number has been adjusted from the previous number of 49 gpd to reflect updated savings estimates provided in the AWE Conservation Tracking Tool 2.0. This number compares closely with a study completed in California that looked at potential savings from large-scale urinal retrofits.

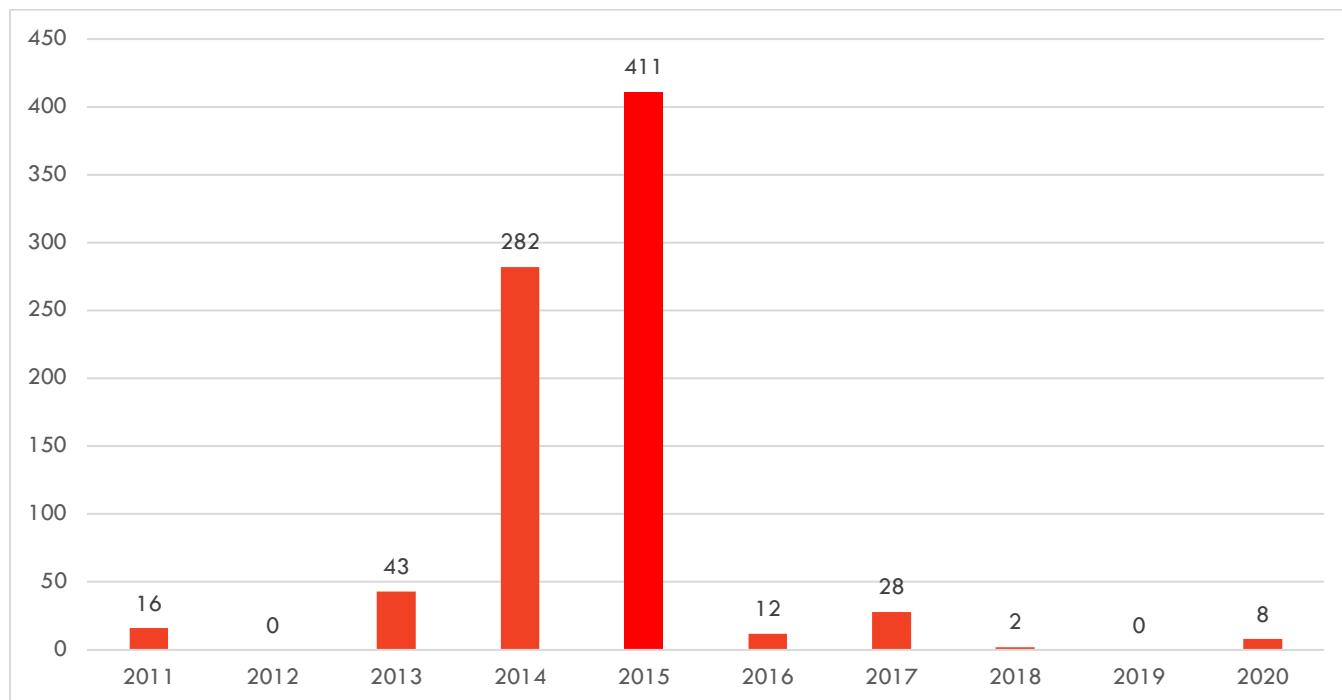


Figure 15: High-Efficiency Urinal Rebates by Year



Clothes Washer Rebate

Implementation date: August 1, 2015

This rebate is designed to offset the difference between purchasing conventional clothes washers and high-efficiency models.

Program Activity:	2020	Cumulative
Number of Clothes Washers:	1,371	8,035
Expenditure:	\$274,200	\$1,622,600
Estimated Gallons Saved:	9.7 million	189.6 million
Estimated Acre-Feet Saved:	30	582

Effective August 1, 2015, Tucson Water began offering residential customers a \$200 rebate for purchasing a

qualifying high-efficiency clothes washer, designated by the Consortium for Energy Efficiency (CEE), which specifies tiers of efficiency based on both water and energy use.

Customer Payback: The average cost of clothes washers purchased by participants was \$796. The cost of qualifying clothes washers typically starts at \$450. Total annual water, sewer, and energy savings per clothes washer is \$116 with, on average, a payback period of five years after rebate.

Clothes Washer Savings:

The calculation for determining water savings for each purchase is 19.3 gpd or 7,043 gallons per annum. This assumption is from the Alliance for Water Efficiency that has used this value in their Conservation Tracking Tool 2.0. This value is a mid-range estimate, as published literature has indicated both higher and lower potential savings.

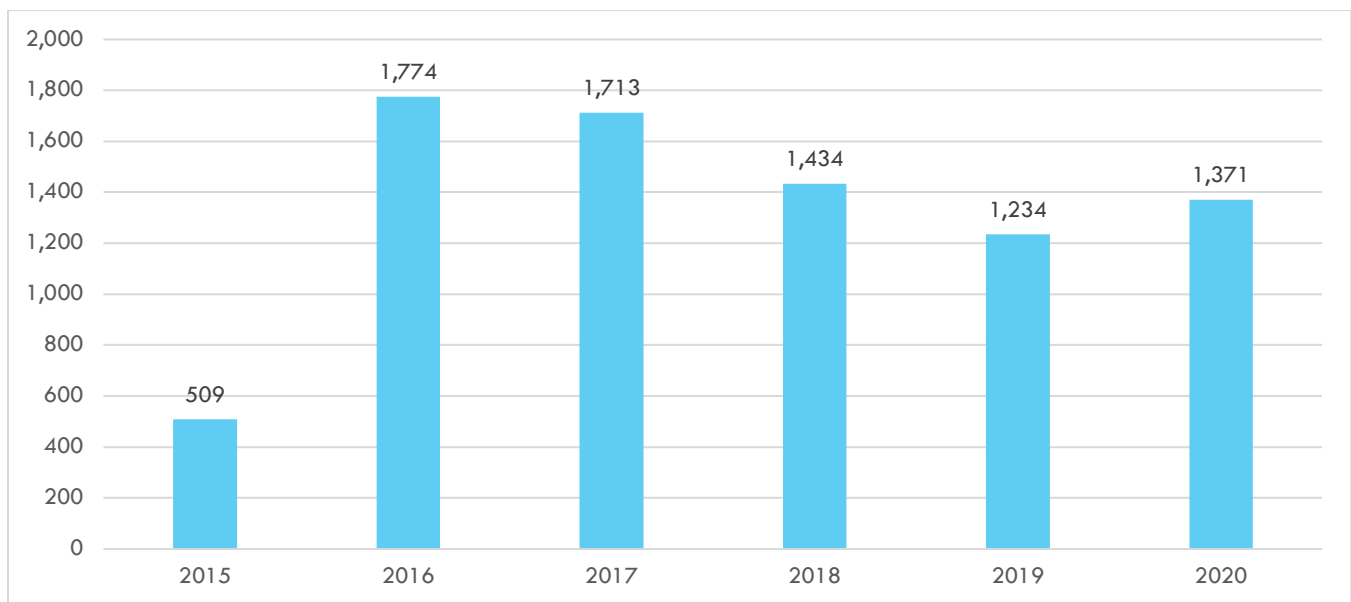


Figure 16: Clothes Washer Rebates by Year

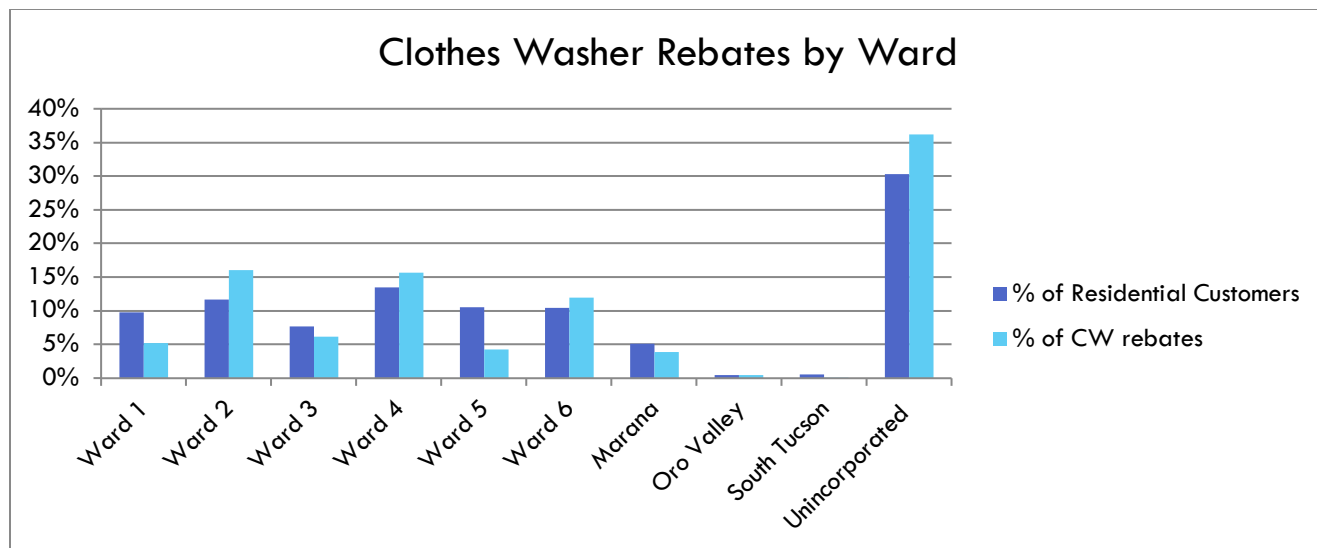


Figure 17: Clothes Washer Rebates by Ward displays the percent of rebates provided compared to the percent of single-family customers in each ward or other political boundary served by Tucson Water.



Gray Water Rebate

Implementation date: January 1, 2011; modified January 1, 2013

This rebate program is designed to encourage homeowners to install gray water systems for landscape irrigation. Beginning January 2013, the rebate amount increased from one-third of the cost up to \$200 to one-half the cost up to \$1,000. Participation in the program has remained low.

To be eligible for the gray water incentive rebate program, applicants must attend a two-hour workshop. Qualifying workshops are offered through Smartscape and Watershed Management Group.

Program Activity:	2020	Cumulative
Approved Applications:	19	192
Expenditure:	\$14,477	\$99,685
Estimated Gallons Saved:	258,685	13.1 million
Estimated Acre-Feet Saved:	1	40

Customer Impact: Of the total amount of waste water generated in a typical home, clothes washers, showers, and hand-washing sinks illustrated in Figure 18, approximately 34 percent can be re-used as gray water for landscape plants. Most applicants are installing laundry-to-landscape systems, which can

recycle 12-16 percent of household use directly from clothes washers.

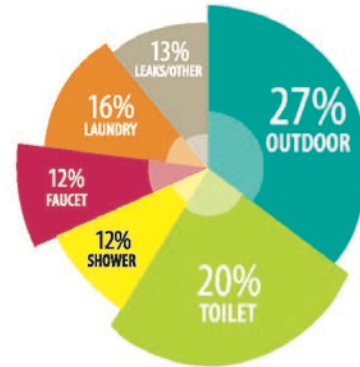


Figure 18: Typical Single-Family Water Use

Gray Water Savings:

The calculation for determining water savings for each rebate is 37.2 gpd or 13,615 gallons per annum.

Most gray water systems approved for rebate are installing laundry-to-landscape systems that divert clothes washer water to the landscape instead of the sewer system. This savings number is calculated by multiplying the percent end use of clothes washers (16%) and Tucson's GPCD, to get 13.5 GPCD. This number is multiplied by the average persons per single-family household (2.76).

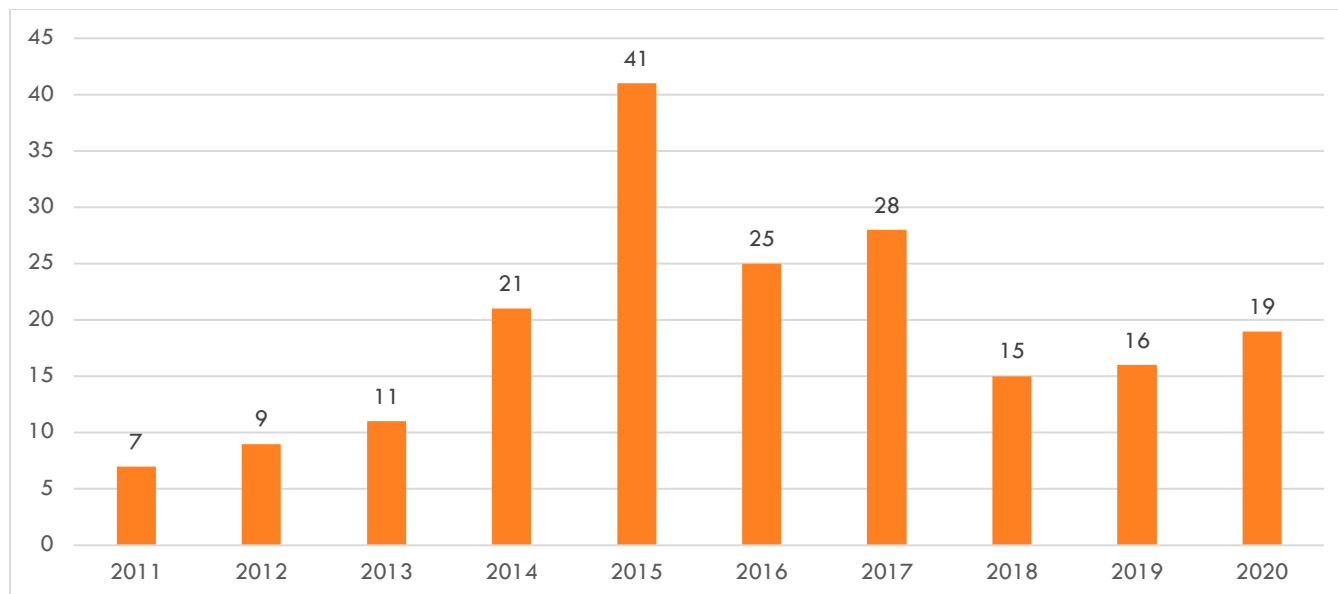


Figure 19: Gray Water Rebates by Year

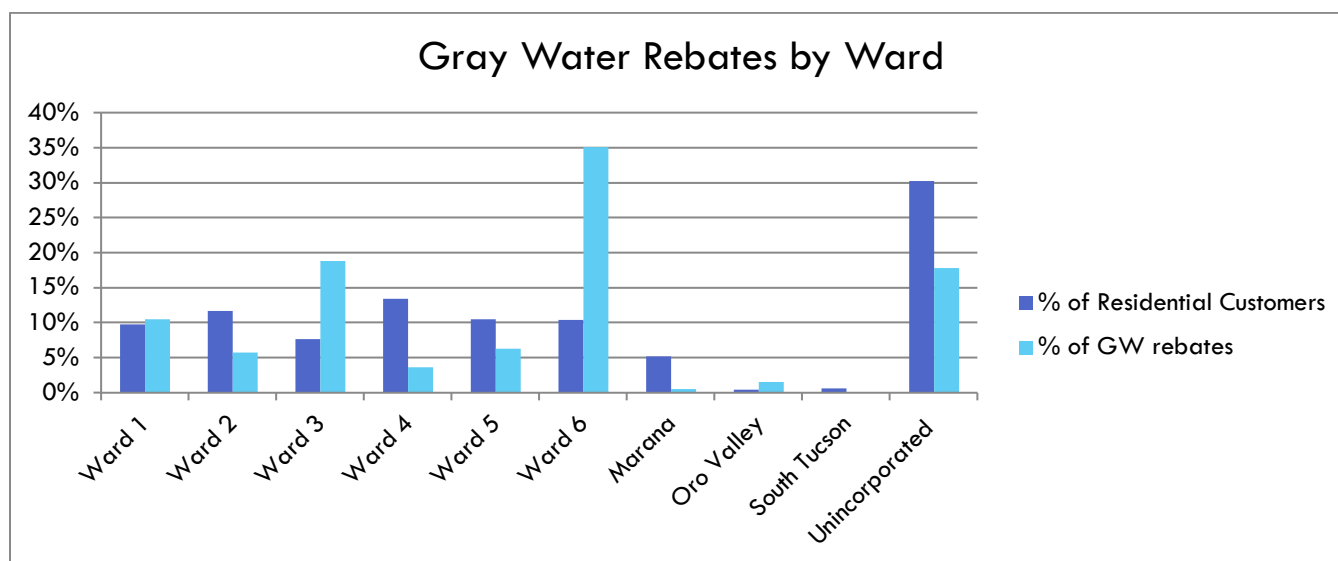


Figure 20: Gray Water Rebates by Ward displays the percent of rebates provided compared to the percent of single-family customers in each ward or other political boundary served by Tucson Water.



Irrigation Efficiency Incentive Program

*Implementation date: July 7, 2008; modified fall 2014;
put on hold beginning FY17-18*

Program Activity:	Cumulative
Number of Irrigation Rebates:	33
Expenditure:	\$189,889
Estimated Gallons Saved:	62.1 million
Estimated Acre-Feet Saved:	191

The Irrigation Efficiency Incentive Program, formerly Irrigation Upgrade Rebate Program, introduces multi-family and commercial water customers to the concepts of irrigation efficiency and uniformity. This program remains on hold.

Program Update: During several pre-upgrade inspections for applicants, it became apparent that some irrigation systems were in such disarray that we have had to re-examine the type of assistance best suited to achieve a more stringent landscape irrigation

design standard. Concerns about investing in retrofitting existing systems that were either poorly designed from the start and/or have been improperly maintained throughout the years have become prominent. Tools need to be developed to help staff and customers evaluate landscapes and compare retrofitting an existing system to redesigning a brand-new system. The challenge has been to identify ways of effectively inventorying existing flaws in established landscape irrigation systems (moving and/or adding sprinkler heads and emitters versus retrenching and installing brand new systems) and calculating potential savings opportunities.

There is also a need for landscape professionals with the proper credentials in efficient irrigation design, installation, and maintenance to help our customers.

Currently, a water budget GIS application is being developed to integrate monthly consumption data from the billing system and landscape area and landscape type for a particular customer/parcel. This application will empower customers to adjust watering practices based current consumption data and monthly water budgets.



Customized Commercial Efficiency Program

Implementation date: January 1, 2016

Tucson Water's customized commercial rebate encourages businesses and industries to use water efficiently. Rebates help offset the initial costs of installing water-saving hardware, equipment, and systems. Rebate amounts are calculated based on estimated water savings to ensure program cost-effectiveness.

Program Activity:	2020	Cumulative
TAP Customers:	0	40
Expenditure:	\$0	\$64,848
Estimated Gallons Saved:	0	24.8 million
Estimated Acre-Feet Saved:	0	76



The Tucson Audit Program (TAP), replaces the WaterSmart Business Program and offers free water audits and customized incentive packages to business customers. Tucson Water has contracted with Cascadia

Consulting Group to provide technical services for this program. TAP audits identify water and financial savings opportunities for organizations and businesses through a Water Efficiency Recommendations Report.

The City of Tucson updated its Drought Preparedness and Response Plan in 2020 to align with current Colorado River Basin indicators, primarily driven by the 2019 Drought Contingency Plan. Conservation staff is preparing for future tiers of drought response (currently the City is in Tier 0). Tier 1 drought, includes providing targeted conservation information for customers who exceed water use guidelines and Tier 2 drought includes providing targeted audit assistance for customers who exceed water use guidelines. For more information: <https://www.tucsonaz.gov/water/drought-preparedness>

The TAP program will adapt outreach efforts to align with the updated 2020 Drought Preparedness and Response Plan, providing audit services for all customer classes with a focus on those that exceed water use guidelines.

All technologies and retrofits that can prove real water savings are considered for a rebate including the HET, urinal, and clothes washer rebates, which are already in place.

The uptake of rebates based on efficiency recommendations has been slow; it has become apparent that staff needs to invest more time in engaging customers that have already received audits to drive them to action. In 2020 audits slowed due to the pandemic. Conservation staff has been doing more commercial audit training and reviewing conservation opportunities with commercial customers that request a water audit.

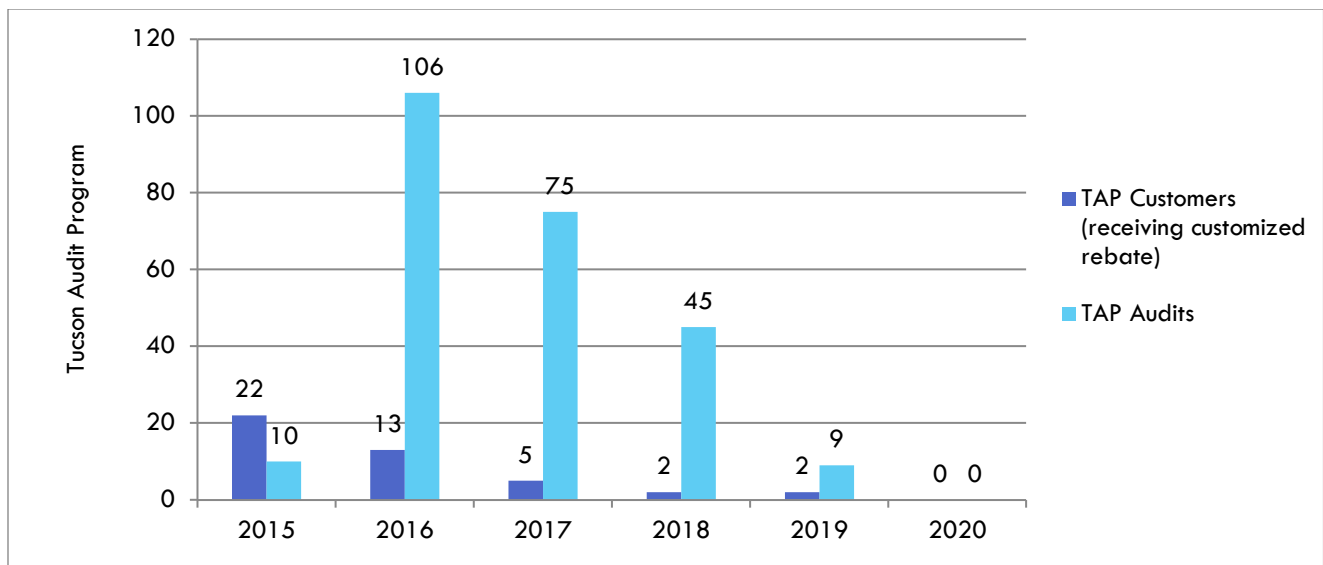


Figure 21: TAP Custom Commercial Rebate and Audits by Year

Rainwater and Stormwater Programs

Rainwater and Stormwater programs represent a shift in philosophy in water management strategies for Tucson Water. Both rainwater and stormwater harvesting are considered additional or alternative water supplies when captured and put to beneficial use. These alternative water supplies, when considered as part of a larger water supply portfolio and regional water planning, become part of an integrated water management approach, known as One Water.

There are two general categories of rainwater harvesting; active rainwater harvesting refers to a tank or cistern storing rainwater collected from roofs, which provides a means to store the rainwater for later use; passive rainwater harvesting refers to directing and retaining water in the landscape using site appropriate practices such as basins, berms, terraces, swales, and infiltration trenches.

Stormwater harvesting refers to rainwater collected from non-roof surfaces, such as streets, parking lots, hardscapes, and landscapes. Strategies to capture and utilize this water include, landscaping designs to retain water in soil, semi-porous hardscape material, curb cuts, and detention/retention basins. Reducing stormwater flows is often a main impetus of rainwater collection in urban settings and both play a role in an integrated approach to water management.

The rainwater harvesting rebate program is reported separately from the other efficiency programs because it addresses broader goals and objectives than demand management goals aimed at strictly conserving water. Rainwater and stormwater programs are designed to integrate this alternate water resource into a long-term planning framework that incorporates the One Water approach. Policy and guidance for this effort is provided through Plan Tucson.

One Water works to:

Integrate and optimize urban water systems within the larger context of a city.

One Water is defined as an approach “that considers the urban water cycle as a single integrated system, in which all urban water flows are recognized as potential resources, and the interconnectedness of water supply, groundwater, stormwater, and wastewater is optimized, and their combined impact on flooding, water quality, wetlands, watercourses, estuaries, and coastal waters is recognized.” – *Water Environment & Reuse Foundation*



Rainwater Harvesting Rebate Program

Implementation date: September 27, 2011; modified June 1, 2013; modified July 1, 2015

The residential rainwater harvesting rebate program was introduced in June 2012, retroactive to September 27, 2011. The program was expanded in July 2015, to include curb cuts/core drilling and small commercial customers. As shown in Table 4, this program has the highest expenditures of Conservation Fund incentive programs.

Program Activity:	2020	Cumulative
Approved Applications:	318	2,850
Expenditure Level 1:	\$11,041	\$128,248
Expenditure Level 2:	\$359,398	\$3,116,484
Expenditure L-I Level 1:	-	\$25,892
Expenditure L-I Level 2:	\$16,365	\$298,788
Limited-Income Grants	\$10,603	\$51,820
Estimated Gallons Offset:	18.7 million	81.4 million
Estimated AF Offset:	57	250
Gallons of Storage:	494,492	3.7 million

Tucson Water will rebate qualifying residential rainwater harvesting system costs under two levels of funding:

- Level 1 – Simple/Passive (earthworks) will rebate 50 percent of the cost of eligible material and labor up to \$500
- Level 2 – Complex/Active System (tanks) will rebate system costs up to \$2,000 based on gallon capacity:
- \$0.25 per gallon capacity of 50-799 gallon tanks
- \$1 per gallon capacity of 800 gallon and larger tanks

Applicants may apply for both a passive and active rebate not exceeding \$2,000 for the combination.

Applicants must attend an approved three-hour workshop to qualify for the rebate program. Sixty-one workshops were held this fiscal year and 1,034 people attended; ten workshops were held in Spanish. Qualifying workshops were offered in English through Smartscape and Watershed Management Group, and in Spanish by SERI.

Rainwater Harvesting Savings:

The basic evaluation method used by Tucson Water is to compare the usage of a control group to the participants in a conservation program before and after participants have taken some action to reduce their water usage. Preliminary tracking of water use for systems installed did not show a net reduction in water use compared to two control groups (all single-family and high use).

A new statistical analysis was done in 2017 and determined that savings are 10-12 ccf/year for participants who installed tanks and have not moved since their installation.

The current estimated water savings is calculated from the assumption that tanks will fill, on average, five times per year, based on historic weather and assumed tank usage patterns. This “engineering estimate” provides a total savings number, which when divided by the number of rebate participants to-date, yields 7.4 ccf/year of savings per customer – significantly less than the new statistical findings for the group analyzed.

Low-Income Rainwater Harvesting Grant & Loan Program

In FY 14-15, Tucson Water partnering with SERI, conducted a pilot to develop a low-income rainwater harvesting program.

In FY 18-19, SERI completed their second year of a three-year contract to expand low-income rainwater harvesting services to qualifying participants. Under this contract, SERI qualifies customers based on low-income status and offers design consultations and installation services for interested families. During FY 18-19, SERI provided nine workshops in English, eight workshops in

Spanish and provided information about the program at 40 community events. The largest barrier to implementation has been a back order of cisterns with reliable vendors.

In 2020 SERI completed their third year of a three-year contract to expand low-income rainwater harvesting services to qualifying participants. SERI did 37 rainwater harvesting system installations. SERI received an award from The Arbor Day Foundation and planted trees and shrubs in 217 homes. In response to the pandemic, workshops were held virtually and created 138 posts to promote the program. Due to the pandemic, in-person procedures changed and SERI transferred all of their operations to online, mail, and telephone. Installations slowed and SERI is working with the community to adapt to the new changes and continue with the program.

The Community Food Bank (CFB) completed its third and final year, supporting the low-income rainwater harvesting program. CFB successfully created a workforce development program to build a business incubation and green jobs/workforce pipeline, aimed to provide water harvesting services to the economically challenged residential customer base. Two groups emerged, seeking to launch landscape-type businesses offering water harvesting services and they continue to explore partnerships and opportunities with the city and other organizations.

Low-Income Pilot Savings:

Preliminary tracking of water use for the thirty-one participants compared to the class average usage was about 0.8 Ccf more per month than the class average. Overall, the passive water harvesting installations have not shown a decrease in usage since installing the systems.

Neighborhood-Scale Stormwater Harvesting Program

Tucson Clean and Beautiful (TCB) completed their third year of the pilot Neighborhood-Scale Stormwater Harvesting Program (NSSH) and are beginning the next phase of community investment in green infrastructure

known as GSI Mini-Grants to compliment the newly established GSI Fund that began collecting revenue in May 2020. During 2020 the ward allocations were fully spent in Wards 1, 2, 3, and 6. Funds remaining in Ward 4 and 5 were nearly fully expended, and the Mayor's allocation still has close to \$100,000 at the end of 2020. Pilot program totals are:

Ward	Number of Projects	Total Investment
1	11	\$140,103
2	3	\$137,215
3	9	\$139,785
4	3	\$47,438
5	4	\$108,964
6	9	\$134,102

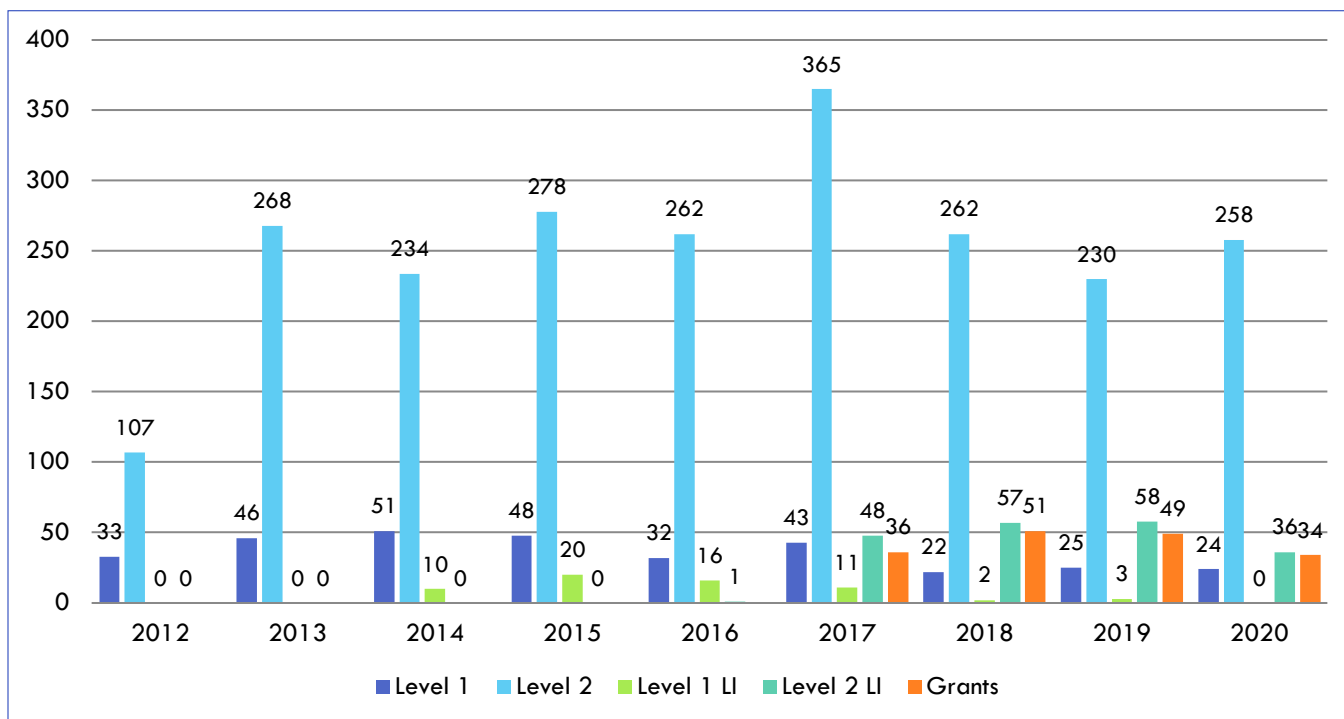


Figure 22: Rainwater Harvesting Rebates by Year

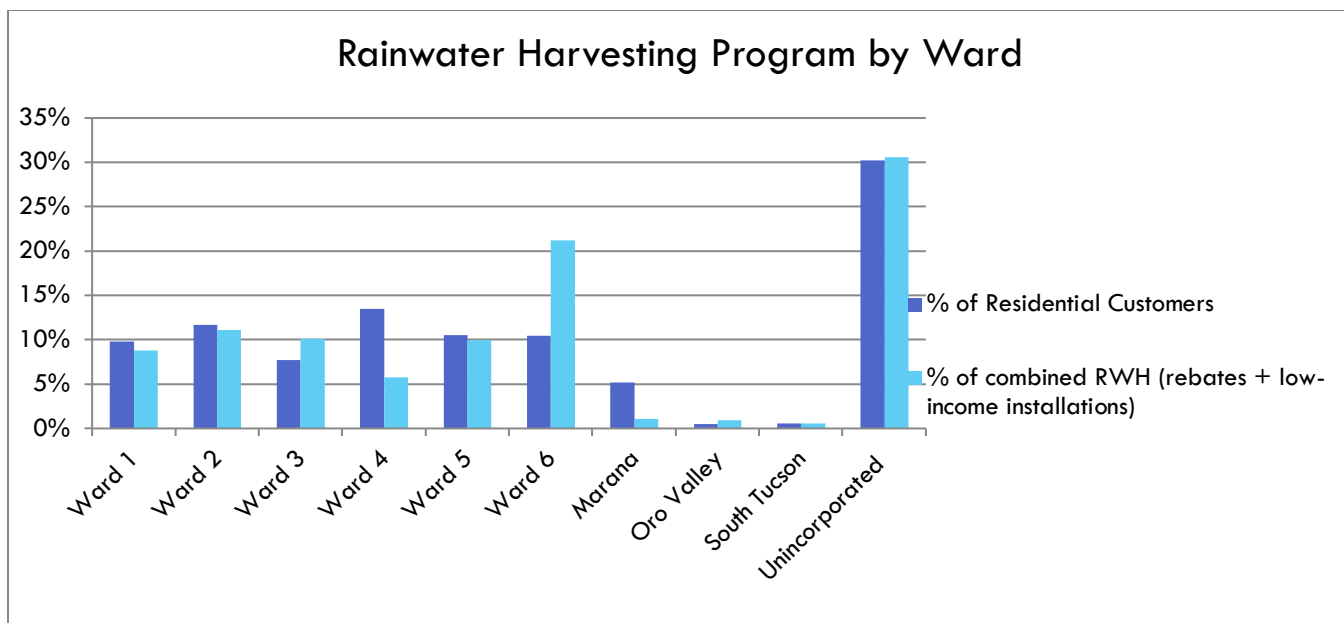


Figure 23: Combined rainwater harvesting projects, including rebates and grants/loans for low-income customers compared to the percent of single-family customers in each ward or other political boundary served by Tucson Water.

Zanjeros

The Zanjeros continue to serve as PICO's field team, providing customer water audits and water waste enforcement throughout the community.

Water Audits

Water audits are requested by customers, usually driven by high bill and high consumption concerns. Audits are scheduled in two-hour blocks, scheduled at the customer's convenience. The onsite audit includes a download and review of hourly, 40-day water use recorded at the meter, a review of all onsite water uses, identification of leaks and additional efficiency opportunities at the property. A total of over 1,000 residential audits were performed during the fiscal year, as well as 31 commercial audits.

Water Waste Enforcement

Enforcement of the Water Waste Ordinance (27-15) is under the purview of Conservation Program staff.

Water waste typically involves overwatering, malfunctioning irrigation systems, hose washing of hard surfaces, and misting systems operating in unoccupied areas.

Emails and phone calls are the two most common ways that water waste is reported. Reports of water waste also come in through email and the See Click Fix phone app. The fine structure for a first offense is a minimum of \$250. Subsequent offenses within three years are a minimum of \$500.

The team made 107 visits in 2020, issued 42 verbal warnings, and no citations were issued. Reporting issues with the current database may have resulted in fewer visits being documented than actually happened. Conservation staff is working with IT on transferring the water waste database to an online system used by the entire City of Tucson for plans, permits and code enforcement.

Professional Training

In 2020 the Zanjeros did an intensive training on commercial facilities, with particular emphasis on cooling towers and learning new water monitoring technology, including an ultrasonic flow meter and high-frequency data loggers. This training is designed to increase knowledge and skills of more complex commercial facilities so that the Zanjeros team can provide audit services to a wider range of commercial customers, which supports Tucson Water's drought response plan readiness. Currently, two of the four Zanjeros have their National Green Infrastructure certification and all earned the professional rainwater harvesting design certification course offered by Watershed Management Group.

Zanjeros audit savings:

A recent analysis found that single-family customers who have received an audit save nearly 2,500 gallons (over 3 ccfs) per month. On average, these savings persist for at least three years, once use has returned to normal, following the audit.

Zanjero Work Orders

Current Year Water Audits: 1110

Current Year Commercial Audits: 31

Current Year Tampering WOs: 127

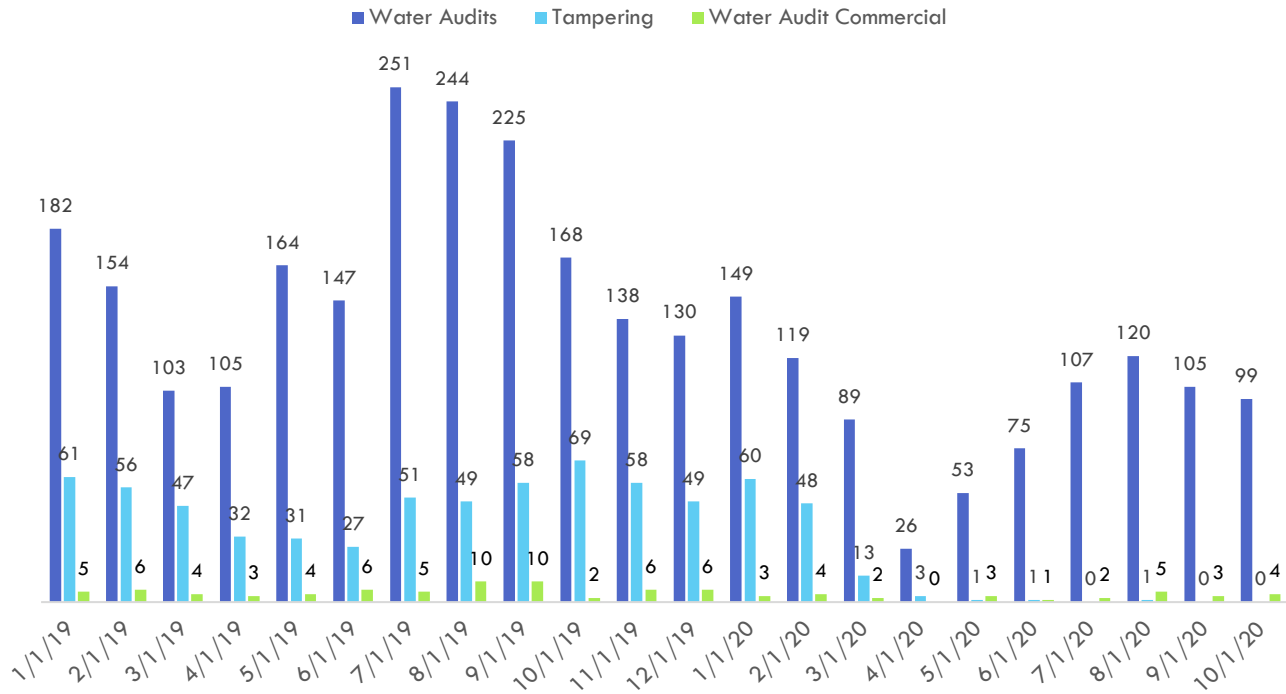


Figure 24: Graph of monthly audits completed by the Zanjeros team for 2020, including 2019 data for comparison.

Community Education Programs

Tucson Water continues to contract three partners that provide educational services to K-12 audiences and landscape professionals throughout our service area.

Tucson Water partners with Arizona Project WET (APW) and Environmental Education Exchange (EEExchange) to offer youth education programs, and Smartscape which offers adult education for landscape professionals and residents. Both APW and EEExchange ensure that all programming meets Arizona Department of Education K-12 Standards.

Figure 25 illustrates the total annual engagement of students, teachers, parents and the general public, giving an indication of the expansion and increased investment in Tucson Water's education programs over the last decade. Together, our education partners have

reached over 500,000 students, teachers and community members in the last decade.

2020 brought unexpected challenges to the traditional approaches for delivering educational services for all three providers. Specific adaptations to delivering content and services are described in the following sections.

Dynamic maps illustrating the geographic distribution of school programs are available on the website. To access the school program map, go to: tucsonaz.gov/water/conservation.

Public engagement counts:

Numbers of youth and adults engaged are reported by Tucson Water's partner programs as direct counts for Adults/Public and Students (Direct) and teacher reports of how many students are served by these programs for Students (Indirect).

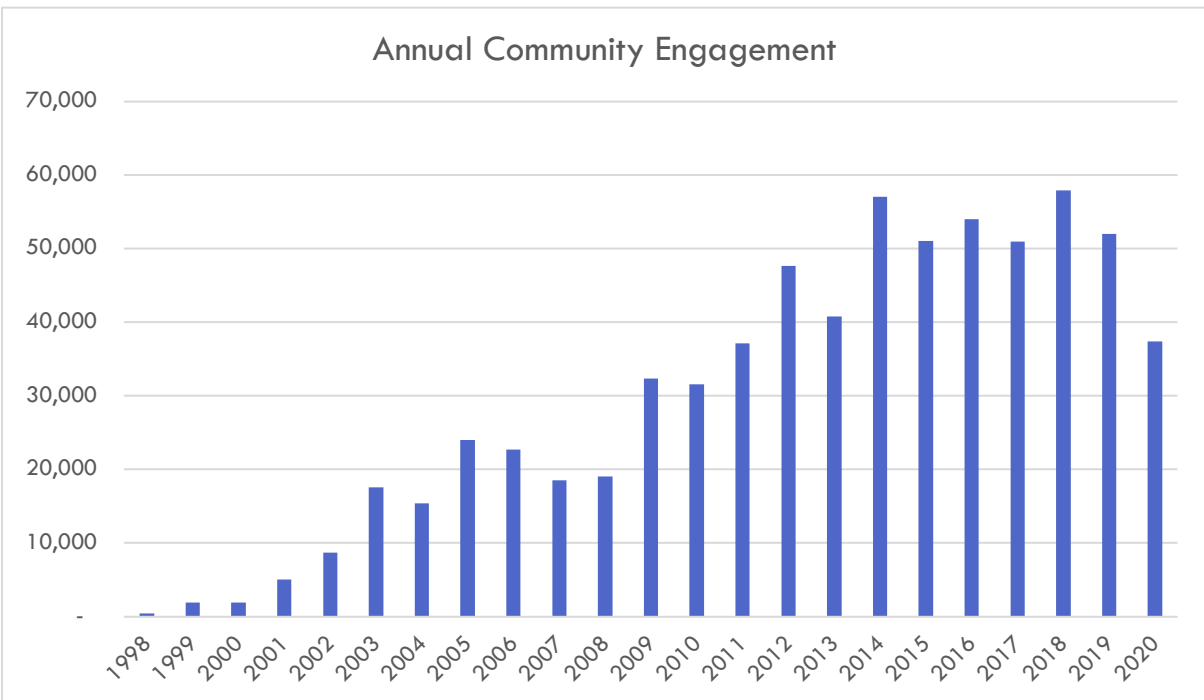
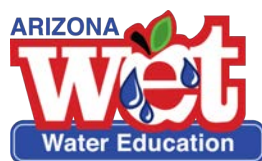


Figure 25: Bar graph showing the yearly impact of the education programs funded by Tucson Water.

Arizona Project WET (APW)



Tucson Water and The University of Arizona Water Resources Research Center established the first intergovernmental agreement (IGA) with APW in 2006. Today, APW provides seven primary programs to elementary through middle schools throughout Tucson, as well as community outreach through various events. Since 2006, with Tucson Water's collaboration and support, APW has engaged over 6,000 teachers, nearly 300,000 students, and over 30,000 adults in STEM-based water education in the Tucson Water service area.

2020 Activity:

Students Reached	4,364
Teachers Reached	146
Adults Reached	235
Audit Projected Water Savings ²	280,000

APW provides teacher training and direct student outreach to teachers and students in the Tucson Water service area to develop stewardship and STEM literacy in K-12 learners. Teacher trainings, or professional development, provide motivated teachers with the knowledge and skills to deepen their students' understanding of local water issues. Direct engagement provides classrooms with interactive presentations by trained educators, as well as exploratory field trips Tucson Water's Sweetwater Wetlands.

Direct student educational programs include:

- 2nd grade Land Water & Watersheds
- 4th grade Water Festival
- 3rd – 5th grade Hands-on Groundwater
- K – 12th grade Discovery Program – Sweetwater Wetlands
- K – 12th grade Aqua STEM Rainwater Harvesting

- 6th – 12th grade Groundwater Simulator
- 6th – 12th grade Water Scene Investigation

Unfortunately, beginning in March 2020 in-person presentations and field trips including Sweetwater Wetlands and Water Festivals were cancelled for the duration of the year. APW quickly adapted and developed several pandemic innovations to support virtual classrooms including:

- Online learning tools for students and the community, highlighting the Virtual Arizona Water Festival Event, which includes a suite of videos, online activities, and a short assessment for students and teachers.
- Online Water Scene Investigation program that invited families to conduct a home water audit and install new faucet aerators.
- Virtual Professional Development for educators during summer and fall 2020, including six different offerings that provided 10 days of teacher instruction.
- Virtual classroom support for teachers implementing APW curriculum from their professional development experiences.

Additional information about the program is provided in the annual report available online at tucsonaz.gov/water/conservation.

² Water savings estimate (in gallons) is from the Water Scene Investigation program after retrofitting aerators in student's homes.

Environmental Education Exchange



The EEExchange began working under contract with Tucson Water in 1998 to develop and manage water conservation education programs. The three current

programs are provided for grades one through eight, in multiple school districts throughout Tucson.

Additionally, since the partnership began, EEE has engaged nearly 250,000 students in Tucson Water-sponsored water education programs throughout the service area.

2020 Activity:

Total Students Reached	4,672
Da Drops	1,968
Our Water, Our Future	1,048
Watching Our Water	1,756

1st through 3rd Grade: Water Smart Kids

Water Smart Kids is designed for our community's youngest learners, in honor of the animated talking water drops that take students on a journey beginning in the clouds and ending in the kitchen sink. The presentation focuses on groundwater model activities in which students experience changes in how people have used water over time. At the end of this hour-long program, the presenter passes out student activity booklets and a reusable cup for each student that encourages them to "*Brush up with Just One Cup!*"

4th and 5th Grade: Our Water, Our Future

Our Water, Our Future provides an interactive presentation to upper elementary students with a focus on our water cycle and our sources of water. At the end of this hour-long presentation with Dr. Faucet, students receive a shower timer and a reminder to be mindful about water use when showering. An exciting addition to *Our Water, Our Future* is a full-color activity book given to each student at the end of the presentation.

Middle School: Watching Our Water

The hour-long program formerly called *El Tour de Agua* has been renamed *Watching our Water* and focuses on water sources, water recycling, and water conservation. Students are taught to question if their water sources

are reliable, safe, and sustainable. New multimedia technology has been incorporated, as well as classroom activities to more deeply engage students. Teachers show a pre-visit video to students for background information, and follow up with a post-visit lesson on water conservation (using the Shower Flow Kit materials that are student giveaways).

Unfortunately, beginning in March 2020 in-person presentations were cancelled for the duration of the year. EEE quickly adapted and developed several pandemic innovations to support virtual classrooms including:

- Livestream Recordings based on in-person scripts that were available via Tucson Water's Facebook page and YouTube.
- Spring 2020 Activity Booklet Delivery to ten school sites in four districts where staff were providing grab-n-go meals and work packets for students to pick-up.
- New Student Learning Guides developed for each of the three programs that include full-color pages, new characters and new activities with QR codes that link to videos with related content. These guides will be disseminated to schools and individuals upon request in 2021.

Additional information about the program is provided in the annual report available online at tucsonaz.gov/water/conservation.



Smartscape

Since 1989, Tucson Water has executed a series of IGAs with the University of Arizona for a landscape water conservation program designed to reduce water consumption. With this partnership, Tucson Water

launched a WaterSmart program in 1990 aimed at homeowners to broaden the community's water conservation ethic. By the end of 1992, the need for training specifically tailored to landscape professionals was identified. In twenty-five years, Smartscape has trained nearly 3,500 landscape pros and provided classes for over 6,000 community members.

2020 Activity:

Professional Workshops	41
Pro Workshop Attendees	184
Pro Certificates	118
Residential Workshops	23
Workshop Attendees	468

Smartscape's "A Training Program for Landscape Professionals" was launched in both the Tucson and Phoenix areas in 1994 and was developed collaboratively by Tucson Water, the University of Arizona Cooperative Extension, Arizona Municipal Water Users Association, the Arizona Nursery Association, the Arizona Landscape Contractors Association, and industry representatives. The program is a comprehensive, research-based training program that instructs landscape professionals in the fundamentals of design, installation, irrigation, and maintenance of low-water-use landscapes. Key components of the program are the need for efficient water use, the regulatory environment, methods of water conservation in the landscape, and the principles of Xeriscape. The Pro series of eight classes are taught by local industry experts in both English and Spanish, which include:

- Plants, Soils, and Water
- Landscape Irrigation Systems
- Landscape Water Management
- Desert Adapted Plants
- Maintaining Desert Adapted Plants

- Plant Disorders
- Landscape Design and Renovation
- Plant Selection and Installation

In 2018, Smartscape implemented an exam for the Pro series, requiring course participants to pass a closed-book exam at the completion of the course. The results have been positive and move the program in the direction of requiring pros to demonstrate a base level of knowledge and proficiency.

Additional advanced classes for professionals include:

- Advanced Irrigation (English and Spanish)
- Advanced Plant ID & Selection
- Turf Irrigation Management
- Urban Tree Management (English and Spanish)

The third annual Sustainable Landscapes Expo had to be cancelled days before the event due to the emerging coronavirus and shelter-in-place order. In response to closures, Smartscape moved their training platform online and began delivering courses virtually. Smartscape has recruited and trained new instructors, has worked closely with Maricopa County Smartscape to align offerings and is developing new courses in response to consumer interest and emerging trends, like green stormwater infrastructure and nature-based design.

Additional information about the program is provided in the annual report available online at tucsonaz.gov/water/conservation.

Other Conservation Activities

Tucson Water engages various partners in a host of other conservation program activities that help to broaden the reach and impact of Tucson's conservation program. Conservation staff usually participate in community outreach events and education partner activities. However, except for early 2020, the pandemic prevented this type of engagement. Professional presentations at technical conferences were made virtually in 2020, in addition to occasional community presentations. A few specific program activities are highlighted below.

Community Garden Pilot Program

In 2018 Tucson Water launched a pilot program to offer more affordable potable water rates and infrastructure to qualifying community garden customers. This pilot program was developed through engagement with representatives from local community gardens, in support of Plan Tucson goals to increase urban agriculture and better serve disadvantaged communities. Gardens must be within city limits, have a potable meter feeding the garden only and backflow unit, and meet the definition of a community garden, as defined in the City's land use code. At the end of 2020 ten gardens had been approved for the pilot community garden rate, including two that entered into payment plans, one for their backflow unit and one for both the meter and backflow. For more information, visit: tucsonaz.gov/water/garden.

Conservation Kits for Customers

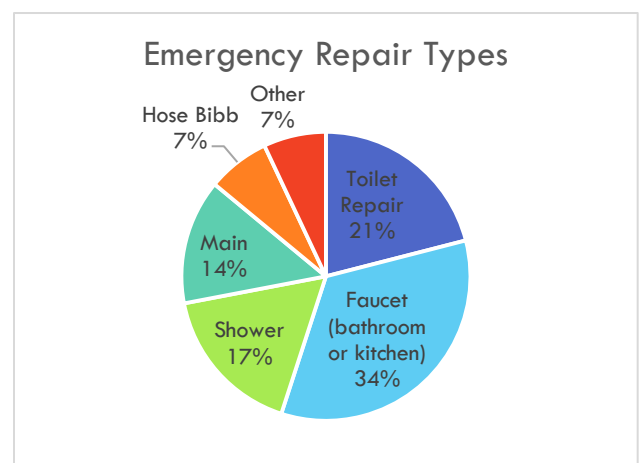
In 2019 Tucson Water, in partnership with EEE, began mailing conservation kits to customers upon request. Customers complete a request form in English or Spanish, available on the Tucson Water website. These kits contain low-flow shower heads (up to 2), a 5-minute shower timer, toilet tank bags (up to 2) and leak detection dye tabs faucet aerators (up to 2). Even with a pause in shipping during the height of the pandemic, 2020, the following items were distributed:

Shower heads	906
Shower timers	785
Toilet tank bags	932
Toilet tank dye tabs	1040
Faucet aerators	1185

Emergency Plumbing Repairs

The newly expanded Emergency Plumbing Repairs program run administered by CHRPA launched at the end of 2019, positioning CHRPA respond to a variety of needs during the unanticipated pandemic and a time of increased need. With the advent of COVID-19 in March 2020, CHRPA modified work practices and policies. But the work of repairing homes for low-income homeowners remained essential because it is hard to shelter-in-place if your place itself is making you sick. Plumbing repairs made possible by the Tucson Water Emergency Repairs Program were a key part of this work. This program covers the cost of labor and materials for plumbing repairs for low-income customers. In 2020 CHRPA provided 250 emergency repairs to 194 households that range from replacing a toilet float to re-piping a home; the average repair was \$488.

CHRPAs workers hear stories nearly every day of exponentially increased water bills leading to water off in a home, or families being unable to flush a toilet or take a shower for weeks, or elderly folks using the bathtub to wash dishes despite the fall risk because the kitchen sink leaks. For many of their clients, turning the water off to avoid a high bill or hiring a costly plumber also means losing access to evaporative cooling. 2020 brought the hottest summer on records alongside the global pandemic which meant having access to cooling and water was even more critical than usual. The Emergency Repairs Program means CHRPA crews can respond quickly to the most urgent need, increasing comfort and even saving lives.



Regional & National Collaboration

Tucson Water maintains active involvement with the Conservation Committee of the Arizona Municipal Water Users Association (AMWUA) and staff continues to attend meetings virtually. AMWUA has created a commercial conservation workgroup to address the needs and opportunities that exist with water conservation in the commercial sector and Tucson Water participates in those meetings as well.

Conservation staff participate in the Conservation Committee of AZ Water, the state chapter of AWWA. This voluntary committee provides networking, informational presentations and technical trainings for water conservation professionals throughout Arizona.

On a national level, Tucson Water is a member of the Alliance for Water Efficiency (AWE), which is a leader in advocating for effective water conservation policies and supports idea-sharing and program development amongst its members. Recently, AWE has worked to secure WaterSense authorization, supported national legislation on water conservation rebate tax issues, advocated against loosening plumbing fixture standards. AWE has identified national interest in cooling tower technology and program implementation and has contracted a national lab to develop a predictive model for cooling tower water demand. Tucson Water has been participating in this working group and will be able to use this model when released.

Retail Outreach and Promotion

A main avenue for promoting conservation and incentive programs has been placement of display racks at nurseries, plumbing supply, and home improvement retailers. Currently, Cirrus Visual serves as a brand ambassador for Tucson Water to ensure that point-of-sale displays are kept filled with the most current information on residential rebates and that employees are updated on any program changes. Displays at about 20 of the highest-demand retailers are stocked monthly with brochures and rebate applications. In total, Tucson Water has established relationships with 42 retailers in the service area. From tracking how customers learn about the rebate programs, staff knows that retailers are a very

important part of program promotion; many customers do not know rebates exist until talking with an employee at one of our retail partners' stores.

Appendix A — Plan Tucson Policies Addressed with Water Conservation Programs

- E4: Build and maintain partnerships among neighborhood, community, business and regional institutions and programs to increase educational opportunities.
- G1: Provide the public with regular communication and sufficient information regarding policy, program, and project planning and decisions-making via multiple methods.
- G4: Increase participation of the traditionally underrepresented populations in policy, program, and project planning and decision-making.
- G6: Coordinate and collaborate with NGOs to increase public participation.
- G7: Develop and maintain strong partnerships with regional and local NGOs, including educational institutions, non-profit organizations, and neighborhood and citizen groups.
- EC9: Assess and address the vulnerability of the community's health and safety, economy, and natural resources to climate change, and develop assurances that vulnerable and disadvantaged populations are not disproportionately impacted by climate change.
- WR2: Expand the use of alternative sources of water for potable and non-potable uses, including rainwater, gray water, reclaimed water, effluent, and stormwater.
- WR3: Expand effective water efficiency and conservation programs for City operations and for the residential, commercial, and industrial sectors.
- WR6: Integrate land use and water resources planning.
- WR7: Collaborate on multi-jurisdictional and regional water planning and conservation efforts.
- WR8: Integrate the use of green infrastructure and low impact development for stormwater management in public and private development and redevelopment projects.
- WR11 Conduct ongoing drought and climate variability planning.
- G11: Encourage green infrastructure and low impact development techniques for stormwater management in public and private new development and redevelopment, and in roadway projects.
- G12: Rehabilitate and enhance natural drainage systems, water detention and retention basins, and other infiltration areas for multiple benefits, such as recreation, wildlife habitat, and stormwater management.
- G14: Expand and maintain a healthy, drought-tolerant, low-water use tree canopy and urban forest to provide ecosystem services, mitigate the urban heat island, and improve the attractiveness of neighborhoods and the city as a whole.
- G15: Create, preserve, and manage biologically rich, connected open space; wildlife and plant habitat; and wildlife corridors, including natural washes and pockets of native vegetation, while working to eradicate invasive species.
- G16: Protect, restore, enhance, and manage trees for their long-term health, including providing guidance on proper planting, care, and maintenance.
- RR5: Pursue interim uses and/or green infrastructure on vacant and financially distressed properties.
- LT10: Support urban agriculture and green infrastructure opportunities in new development or redevelopment when appropriate.
- LT12: Design and retrofit streets and other rights-of-way to include green infrastructure and water harvesting, complement the surrounding context, and offer multi-modal transportation choices that are convenient, attractive, safe, and healthy.